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THE AMERICAN BEHAVIORAL SCIENTIST

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IN THE NEWS

PERSONALIA: • Current *Who's Who in America* (Vol. 30) lists 50,645 persons, among them 4,974 educators, 1,144 medical scientists, 582 economists, 448 librarians, 406 historians, 363 psychologists, 225 pol. scientists, 194 sociologists, 140 general soc. scientists, 106 social workers, 93 anthropologists.

CENTERS AND PROGRAMS: • George Washington U.'s new *Center of Behav. Sciences* is directed by G. L. Lippitt. • Columbia's Conservation of Human Resources Project is reorganizing on an independent basis as *The Inst. of Human Resources.* • The *Intl. Acad. of Astronautics* will give space scientists throughout the world an info. clearing house, is initially financed by $75M from Guggenheim F. • *Brookings Inst.* moved into its new $3.9 million *Center for Advanced Study* (1775 Mass. Ave. NW) on July 10. • A large portion of Truman's presidential papers are now available to scholars for research purposes at the Truman Library in Independence; Library has complete research facilities, incl. microfilm reading room and photo lab. • *Citizenship Clearing House* selected first 6 grad. fellows in State and local govt. for 1960 for a semester of participation-observation on govt. staffs; W. M. Shear of Syracuse U. was selected as CCH Faculty Fellow in State and local govt. and will serve on Gov. Rockefeller's staff for a year. • Beginning in April '60 the *Assoc. of Amer. Univ. Presses* began 6-yr. program for translating 75 Latin American scholarly books into English, with $225M from Rockefeller F., funds administered by Yale U. Press. • Recent meetings: symposium on cerebral systems and computer logic at Calif.IT in Spring '60; seminar on urbanization in India, sponsored by *Inst. of Intl. Ed.*, at U. of Calif. in June '60; *Intl. Conf. on Sci. in the Advancement of New States* at the Rehovoth, Israel, *Weizmann Inst. of Sci.* in Aug. '60. • The *Intl. Pol. Sci. Assoc.* will hold its next Congress in Paris, Sept. 26-30, '61, not 5th to 9th as previously announced.

GOVERNMENT AND SCIENCE: • Dept. of HEW has granted U. of Chicago $1,017M to conduct first extensive analysis of causes of death as related to social, econ., geographic, ethnic backgrounds. • New role of NSF is to help universities bolster scientific programs; grant amounts are 5% of basic research grants rec'd. from NSF, will total *c.* $2.9 million in '61 and are provided on no-strings-attached basis, signifying important new govt. policy. • Senate Subcommittee on Constitutional Rights, T. C. Hennings, Jr., Chairman, is conducting "a continuing broad study of freedom of information and secrecy in government" and is seeking from scientists "descriptions of specific instances where scientific progress may in some way have been hampered by restricting or withholding information from (a) individual scientists, (b) groups of scientists, (c) authors and publishers . . . , and (d) members of the public."

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Unexplored Realms of Underground Strife

by J. K. ZAWODNY

Subversion and revolution litter the course of history. They appear to be brought about by organized societies within societies. Yet we have surprisingly little systematic knowledge about their nature, their leaders, and their members. J. K. Zawodny of Stanford University has both academic and practical knowledge of his subject. He has made an initial study of underground movements, sponsored by the Project for International Studies in Conflict and Integration at Stanford, and during World War II he led a platoon of the Polish underground.

Late in June, 1960, patrols of Jamaican policemen and Commonwealth troops moved into the Red Hills near Kingston, Jamaica. They were hunting members of the politico-religious Ras Tafarians, whose jailed leader, Rev. Claudius Henry, hopes to make Jamaica a Negro republic. One unarmed patrol of four drove into a Ras Tafarian ambush and surrendered. Two of the troops were then killed, the other two wounded. They were the first casualties in what may become the world's newest underground war.

There are active underground movements in at least 11 other countries: Algeria, Cyprus, the Union of South Africa, Argentina, China, Spain, Venezuela, Cuba, Guatemala, South Korea, and Kenya. An average of about 180 persons a month have been killed as a result of underground activities over the past two years.

These are the "Peoples' Wars." They are "anti-government," "subversive." They may also be highly effective. Since 1945 the forms of government and the ruling elites of seven countries have changed through activities related to organized, non-legal violence: China, Israel, Egypt, Vietnam, Turkey, Iraq, and Cuba. The governments of other nations, especially in Latin America, are in tenuous balance because of internal underground movements. And there are "dormant" frameworks of underground movements in ten countries—Hungary, Poland, Romania, Ukraine, Yugoslavia, Bulgaria, Lithuania, Latvia, Estonia, and Albania—that may explode into the open at an opportune moment. American forces in Korea experienced the military effectiveness of underground activities. Over 30 per cent of American losses in the Korean War resulted from enemy guerrilla action and sabotage.

Little is known about the ways underground movements vary in organization, processes, and techniques from one country to another. What is an underground movement? How does it operate? Under what circumstances does it succeed or fail? Why do people join it voluntarily? Why are they willing to sacrifice themselves? At which point does a movement come into the open and begin a revolution? Both China and the Soviet Union have special institutes studying the techniques of revolutionary movements and feeding data to their governments. Yet so far as I know there is no comparable institution in the Western world. Our military men are preoccupied with tactical questions. They have neglected to study the principles of behavior of underground and guerrilla forces, and lacking such knowledge they cannot predict the development of undergrounds.

We do know that there are striking parallels among the social and psychological patterns of underground movements, organized crime, and juvenile gangs. All three are societies within societies. All three are "groups in frustration." The more we know about underground movements, the more we are likely to know about "crime syndicates" and street gangs.

Underground Society

The Polish Underground Movement was an elaborate one. In the first half of 1944 the Polish Home Army (A.K.) maintained 700,000 underground soldiers and auxiliaries, while non-governmental political organizations had their own military units as well. This society within society had its own administrative organization, courts, intelligence service, executioners, hospitals, social service, press, and universities as well as armed forces.

Underground societies, like any other societies, have "operational codes"—established organizations, processes, and practices. The fundamental framework of subversion seems to be the same from one culture or nation to another. On the other hand, such things as ideological symbols and ideals of underground movements differ from one culture to another.

Undergrounds have similar organizations, though we seldom know who really makes decisions and who has formal and informal control over organized violence. The rules of the game, the means by which leaders manipulate the rank-and-file, and the rewards and punishments also seem similar, but we need to know specific instances of decision-making, of maintaining loyalty and unity of purpose among members, and of the use of discipline. Communication networks exist in all undergrounds, but we do not know how they are used to put decisions into effect. Underground movements must be decentralized and mobile for survival. We seldom know how this is done. Centers of power often shift within the movements; how or why is another matter. Most importantly, we need to know which of these patterns and conditions make subversion by a minority using violence most likely to succeed.

The principal leader of an underground movement is usually well-known: *e.g.*, Abbas, Kenyatta, Castro. How such men and their subordinate leaders come to power and hold it is less well-known. The successes of an underground movement are usually credited to its leaders. When failures occur on the policy-making level, however, it is virtually impossible to establish responsibility.

Each level in the underground hierarchy has its techniques of problem-solving. The death penalty, speedily implemented, is often imposed on rank-and-file members for using weapons for private purposes. On some levels of the hierarchy, however, underground leaders may conveniently combine private and public interest, producing a curious mixture of Robin Hood and Jesse James.

Members of the Underground

Last year I made an initial study of the French, Italian, and Polish resistance movements during World War II, and of the Chinese Communist (1946-48) and Greek Communist (1946-49) undergrounds. Little is known about the motives that lead people to join such movements. There were curious variations in the memberships of some of these undergrounds. Membership ebbed and flowed with no apparent relation to the movements' prospects of success.

In one period of action a Polish resistance platoon of 15 persons lost all but three men. Five of its original members were killed, seven others were seriously wounded. These people knew that chances were against their survival, and there were many opportunities for them to withdraw from action, yet all of them stayed. It is worth mentioning that none of these people said that they had joined "to fight for the country" or "to defend civilization." Why, then, did they take these risks?

There are a number of propositions about individual and group behavior under stress that would help answer such questions and would lead to a theory of underground behavior. For one thing, it is obvious that for the individual the internal rewards for joining a movement must be greater than the consequences of discovery—which means death in most cases. Another proposition is that the individual's actions against the enemy are determined by the immediate threat, rather than formal allegiance to the values of the group.

Anna Freud has said that "The mechanism of identification with the aggressor is sup-

plemented by another defensive measure, namely, the projection of guilt." For example, guerrillas in many societies have adopted mannerisms, habits, and even pieces of uniforms closely associated with the enemy.

The cultural *Weltanschauung* may have much to do with the ways an individual acts in an underground movement. A man who assumes that he was born for personal happiness—an ideal of Americans—may have a much different attitude toward an underground group than a man who believes he was born to suffer—as do many Russians, Ukrainians, and Poles. The most bloody and intense fighting has been conducted by national undergrounds whose cultural values approve of suffering and self-sacrifice. Suffering is identified with virtue and redemption.

There are also a number of propositions about group behavior that can be tested. For example, when two external groups threaten to annihilate an underground group, the underground will cooperate with the one that seems easiest to manipulate—not necessarily the stronger one. It also appears that an industrial society is better equipped for the integration and cooperation required by resistance movements than an agricultural society. Experience with team work and sharing tasks may be responsible. Industrial societies seem to prefer sabotage activities to guerrilla warfare.

From what we know, most members of guerrilla forces are from the lower social levels. The more men with higher education there are in a country, the fewer educated men there are in sabotage and guerrilla units. People of the lower classes are likely to be the most dissatisfied members of society—and they are apt to feel that they have the least to lose and the most to gain from a successful revolution. It may well be that self-assertion through violence and struggle—a common code of behavior in lower social classes in almost all cultures—explains their use of violence in seeking solutions to problems.

We believe that both love and hate are innate in man and that, paradoxically, men can kill on behalf of both. An underground movement provides a formal aegis for terror and killing. Certainly, much more needs to be known of life in the underground, of organizing an underground, and of combating it. We must finally face up to the question of whether an underground movement is a pool of the noblest forces man can produce, or the cesspool into which his worst instincts drain irresponsibly. It is easy to choose an explanation in keeping with one's own sympathies for those in strife. But what is underground must eventually come above ground. Then all too often follow the regrets, the laments—and in due time another underground.

A Curious Parallelism

Slime-mold amoebae probably do profit by collectivization: the aggregate can do things the individuals cannot accomplish alone. In the amoebae's society, however, all are not created equal; some rise to the top and others lag behind.

And then there is this distressing moral: Those that go forward with such zest to reach the fore are rewarded with sacrifice and destruction as stalk cells. It is the laggards that they lift into the air which survive to propagate the next generation.

John Tyler Bonner

in "The Sociable Amoeba," *University* (No. 2, 1960), p. 24

Bhave's Sarvodaya Society

by ROMESH SHAH

Social change over most of the globe moves from lesser to greater organization, from agricultural to industrial life. Yet Gandhi and his disciple, Vinoba Bhave, envisioned a different type of social order, one in which agricultural village life would be perfected to meet the needs of all its members. Bhave's Bhoodan movement of land redistribution is a direct means to this end. The author, Romesh Shah, studied in Bombay and presently is an instructor in New York University's Division of General Education; he is also a group counsellor at the Henry Street Settlement in New York City.

"People want a revolutionary programme and think that a revolution cannot be wrought without bloodshed. Let me tell you, I cannot accept that conclusion. Those who think that . . . are not revolutionists at all. They are *status quo-ists*. . . . The object before them is not a revolution but bringing about an exchange of places of the present unhappy and happy ones. Is that a revolution? What change has come except that those who are happy, become unhappy and the unhappy become happy? A revolution must signify universal happiness without exception." —*Bhave*

Universal happiness—"the welfare of each and all"—is embodied in Gandhi's conception of a Sarvodaya society, a vision he held long before India achieved her independence. Gandhi's disciple, Vinoba Bhave, assumed both his leadership and his social philosophy after the master's death in 1949. In 1951 Bhave began the Bhoodan movement of land redistribution as the chief means toward the development of a Sarvodaya society.

The five stated goals of Sarvodaya society are:

Each will receive according to his need.

Each will work according to his capacity.

There will be no central governmental authority.

There will be a moral order based on the love of each individual for all others, within the framework of the small village society.

There will be no large-scale industrialization but rather a society of simple economics.

Such a society resembles in theory some of the communist utopias of Western social philosophers. But in its emphasis on a moral order based on love, and in its insistence on village society as the locus of its operation, it diverges markedly from Marxian Communism. And the Gandhian insistence on purity of means places Sarvodaya in direct opposition to the methods of Communism.

In the past nine years Bhoodan has developed into a social movement involving millions of rural Indians. Its appeal is based on the predominantly rural nature of Indian society. There are half a million villages in India that, singly or in groups, lead self-contained lives; all that is consumed is produced locally. Both Bhave and the Indian Government have attempted the task of social reconstruction within this framework of self-sufficient village life, Bhave's method being Bhoodan.

The Bhoodan movement has three means for achieving its goals. The first, from which the movement draws its name, is to secure land through voluntary donations by landlords and redistribute it among the landless.

The second technique associated with the Bhoodan movement is Sampatidan, the collection of funds from the wealthy without land and its utilization for the general welfare. Finally, the movement relies on the Shanti Sena, the "army of peace" composed of those who choose to dedicate their lives to the establishment of Sarvodaya. The Shanti Sena encamps near a village, where its leaders and members attempt to persuade

THE PROGRESS OF BHOODAN FROM 1951 THROUGH FEBRUARY, 1960

STATES	ACRES OF LAND GIVEN TO BHOODAN	VILLAGES GIVEN TO BHOODAN	ACRES OF LAND DISTRIBUTED BY BHOODAN
Bihar	2,106,342	152	246,198
Rajasthan	434,614	735	103,962
Uttar Pradesh	411,484	61	127,835
Madhya Pradesh	404,704	74	89,275
Orissa	396,466	1,946	118,335
Andhra	241,950	483	95,278
Bombay	237,227	603	85,889
Tamilnad	70,823	252	2,349
Kerala	29,021	543	2,126
Six other states[1]	79,635	280	10,120
Totals	4,412,266	5,129	881,367

[1] Assam, Delhi, Punjab, Bengal, Mysore, and Himachal Pradesh. Data for other states are not available.

the villagers to cooperate with their movement.

The physical progress of Bhoodan can be estimated in part by the land it has received and distributed, as can be seen in the above table. In the first nine years of Bhoodan nearly four and a half million acres in 15 States, most of which are located in eastern and central India, were donated to Bhave and his followers. Not all of this land was arable, however, since only 40 per cent of India's 1.2 million square miles is suitable for farmland at the present time. Nevertheless, Bhoodan has effected the distribution of about 900,000 tillable acres, and is holding the balance in trust.

The West knows remarkably little about the fundamental effects of the Bhoodan movement, although its dramatic external manifestations have been given considerably publicity. One essential question must be answered: how profound are the changes wrought by Bhoodan, and how closely do the results correspond to the goals of the movement?

This would be the task of a research program, conducted along the lines set down by contemporary social science. The many villages not yet reached by the Bhoodan movement could be considered the reservoir for cases in the control group. Several of these villages could be studied in order the determine the existing structure of their society and their economic order, as well as their ultimate goals and the immediate changes their people are trying to effect. For our experimental groups we could turn to one or more of the villages in Hyderabad where Bhave began the movement, and seek out the same information.

In addition to these survey studies of village life, we need observations in depth. Researchers would need to take part in the movement itself, accompanying Bhave and his Shanti Sena as they carry out their campaigns. Knowledge of the internal dynamics of this movement is an essential addition to the study of social change. It might be noted here that many other influences are operating at the same time as Bhave in Indian villages: the activities of the Government of India, foreign aid programs, and urban commercial operations all affect, in varying degrees, the social and economic life of the villages.

In general, the goals of the Bhoodan movement must be evaluated by the success of the separate processes of Bhoodan: land collected and redistributed, monies garnered,

continued on page 30

A Respect for Facts

by SOLOMON FABRICANT

Simultaneous views of the status of economic studies and of the methods and operations of the famed National Bureau of Economic Research are afforded by Dr. Fabricant, who is the Bureau's Director of Research. The Bureau undertakes projects that are factually objective, but furnish the grounds for determinations of public policy. A longer version of this article, which is published with the consent of the Bureau, was part of the author's report to his Board of Directors, the Fortieth Annual Report.

American Economic Growth

Substantial progress has been made in advancing the economic welfare of our people.

Today's national income of 2,300 dollars per capita is twice what it was, in dollars of the same purchasing power, some forty years ago; and it is higher in the face of a 70 per cent increase in population and a 20 per cent reduction in the hours of paid work done per capita. Also important, output per man-hour—a measure of the source of income and of leisure—has grown over the past forty years at the average annual rate of 2.6 per cent, about a third greater than the long-term rate experienced by earlier generations. Further, the higher income of today is more evenly distributed than the lower income of earlier years.

We know also that in recent decades the establishment and broadening of social security, unemployment insurance, and public assistance, as well as the development of various forms of private insurance, have lessened the economic difficulties of the aged and of those struck by disaster. Finally, income has become more stable. The four recessions since World War II are among the milder of our history, which means an unprecedentedly long period free of serious depression.

Not until the present generation has progress along each of these dimensions of economic welfare been witnessed.

Few of us feel complacent, however. Income is higher and more evenly distributed and stabler, but the advances in economic knowledge to which we owe this information have also made us conscious of the depth of present economic needs and the width of present disparities. We are keenly aware that many pensions and other incomes are small, that pockets of unemployment persist even in good times, that even mild recessions deepen and widen and multiply the areas of unemployment, that not all workers are covered by unemployment insurance, that strikes sometimes cause serious trouble to those directly involved and to many others as well, that monopoly interferes with the efficient allocation of resources, that inflation profits some and taxes others, that regulations bear unevenly on different sectors of the economy, that efficiency in this country appears to have grown during recent years less rapidly than efficiency in some other countries. Also, while there are grounds for believing that the advances in economic welfare made to date in our country will be retained, we want to strengthen these grounds, and we are eager for more and even speedier progress.

Economic Attitudes and Reform

When we extend our gaze across the seas, we see on the whole less progress and far greater need. In older days, most of us could blink our eyes to dire poverty in far parts of the earth. Since the war, a vastly improved transport and communications network and a veritable revolution in world statistics have exposed and brought closer problems that can no longer be ignored.

This concern for the economic welfare of our fellow men—grown because knowledge of economic needs and disparities has increased, and also because economic progress has lifted the standards of decency we strive to meet—is reflected in a vast spread of public and private philanthropic activities over the globe.

It is reflected, also, in the increasingly critical view taken of existing economic institutions. Some men have always believed that these institutions greatly influence the level and rate of advance of economic welfare. This belief has spread over the years —very rapidly in our generation—and this, too, has served to sharpen men's sense of responsibility for the welfare of their fellows. It has made the drive to economic reform a moral force of great strength. In addition, men have acquired more faith in their capacity to improve social organization. The rise of new social systems to positions of power has contributed to this trend, and competition with them for the world and for the generations ahead has intensified the sense of urgency attached to economic reform.

Change in institutions that is prompted by desire for reform does not necessarily mean reform, however. Existing institutions may be critically viewed; they are not always critically examined. The likelihood that change will bring real progress is strengthened if change is guided by intelligence armed with facts.

Men are frequently so full of the merits of their own proposals that they feel little need to encumber themselves with facts, except for purposes of illustration or as gestures to the hesitant. When attention is paid to "the facts of the case," it is often merely to those facts that support a case; or the attention is hurried and distracted, with little discrimination among facts of varying quality or between facts and sheer guesses. A proper attention to the facts requires not only an effort to become acquainted with them, but involves, as well, a recognition of the limitations on one's own knowledge, as well as on the knowledge of others, and of the uncertainties in one's own proposals as well as in the proposals of others. It even implies an admission that one's ends and one's values may themselves be subjects for analysis.

Men being what they are, an attitude toward economic facts that carries such wide implications is difficult to assume and difficult to hold. It is worth the effort, however, for with it the prospects of further and less painful economic progress are brighter.

The Bureau's Purposes

We at the National Bureau think we see, in the widening—though still narrow—support of the Bureau's activities, signs that more and more men are making the effort. It is to assist them that we devote ourselves to the determination and interpretation of the facts bearing upon economic problems.

To be as useful as possible, we concentrate on the facts bearing on large economic issues, the problems of national importance. To be helpful to thoughtful men, whatever their views of public policy, we limit ourselves to topics that are susceptible of scientific treatment; and we try to determine the facts objectively and interpret them impartially, by so organizing ourselves and our efforts as to minimize bias and other sources of error in the studies we pursue. To make our findings carry conviction to all sections of the nation, we issue scientific reports divorced from recommendations on policy, and assume no obligation toward anyone except to determine, interpret, and publish our results for the benefit of the nation at large.

If what I have stressed, in underscoring the need to apply objective knowledge to the resolution of important economic issues, were to be put in a brief phrase, it would read, "a respect for facts."

This phrase might serve to epitomize also the principles the National Bureau follows in its efforts to enlarge and improve objective economic knowledge. It is a respect for facts derived from a respect for the issues that confront the nation and for the men who try to use facts to resolve these issues.

Let me be more specific about the Bureau's research. Let me briefly note the kinds of facts we try to determine—that is, the

kinds of things and relationships among things, the dimensions and proportions, the events and links between events, on which we try to get trustworthy estimates.

One important class of facts that we aim to determine is illustrated by the quick conspectus, with which I began, of advances in economic welfare since the National Bureau was established forty years ago. In 1920 there was no reliable information at the disposal of government officials, businessmen, economists, or others on the national income, or its rate of growth, or its fluctuations, or its distribution among families, or its relation to the number of workers and hours of labor used to produce it. Each of these basic facts became available only as the Bureau turned its energies to establishing them. When the task of providing the information was taken up by the Department of Commerce and the Department of Labor, we directed our efforts to other questions in this sector of the frontier of economic knowledge.

National Wealth, Productivity, Wages, and Prices

This year we report on studies, under way or just completed, of national wealth and of its distribution among individuals; of productivity, in which industrial capital as well as labor is related to product; and of the trend of money wages, cost of living, and real wages over the past hundred years.

In the first group of studies we ask questions like these: What is the size of the nation's tangible wealth? How rapidly has it grown—since the war and before the war? How big is it in relation to income and how stable is this relationship? Of what does the wealth consist, and what changes have occurred in its composition? How is it distributed among industries and how does this distribution compare with the structure in other countries?

We ask also: How is wealth distributed among individuals and families? In what types of assets are the holdings of different wealth groups concentrated? How have these proportions changed over the years? How do they compare with similar information for other countries? What effects have changes in price levels had on the wealth of different groups of the economy? These questions are not aimed at immediate policy issues. But the answers that Kuznets, Goldsmith, and Lampman are getting—for example, that the richest one per cent of adults in the United States held about 32 per cent of the nation's personal wealth in 1922 and 26 per cent in 1956, and that both percentages are much lower than the most nearly corresponding percentages for England and Wales—will be found scientifically interesting and important and sooner or later useful in dealing with many matters of policy.

So, too, will the answers to the many questions we have raised in the studies of productivity and wages. In the productivity study, for example, Kendrick has established the fact—already mentioned—that output per man-hour rose much more rapidly on the average after World War I than before. This speed-up is found also—indeed, is sharper—in output per unit of real tangible capital, and in output per unit of labor and capital combined. Closely related is the fact that productivity—whether measured by output per man-hour or output per combined unit of labor and capital—rose more rapidly than input in the post-World War I period, and less rapidly than input in the period before World War II. If the increase in productivity is a measure of our ignorance of the factors other than input that account for increase in national output—which is one way it has been described—we may say that in uncovering the striking facts noted, we have also discovered that less is known about economic growth after World War I than about growth before that war. This, also, may be considered an advance in knowledge. It is one reason why the National Bureau is pursuing, and hopes to expand, the study of investment in education that Becker has in his charge.

As for real wages, Long and Rees have given us better estimates and a clearer view of the trend since 1860 than we had before. It was once believed, for example, that real hourly earnings in manufacturing industries had risen by 7 or 8 per cent between 1890 and 1914. We now know that the rise had

been 40 per cent, for Rees took the time and trouble to reconstruct the cost-of-living index needed to deflate money wages.

Sometimes we are provided an opportunity to "audit" and assist in improving an important set of current statistics. This was the case, during the year, with the consumer price index of the Bureau of Labor Statistics. The present index is, of course, far superior to the one Rees has calculated for the pre-World War I period. But it is by no means perfect, as the BLS frequently warns its users. Even when the index was used as a rough indicator of the drift of retail prices, it was of some importance to subject it to occasional professional review. Now that the index appears in the escalator clauses of wage contracts covering millions of workers, the need is much greater. The National Bureau was therefore glad to respond to the Bureau of the Budget's request for a review of this and other price indexes and statistics collected and issued by the federal government.

Economic Organization: Stability or Crisis?

Information on the organization of the economy constitutes another class of the facts we determine. In the area of industrial organization we have recently published Nelson's study of mergers and related factors in American industry since 1895. It extends a basic record on mergers begun by Thorp thirty years ago in another National Bureau study—a record important enough to be currently compiled by the Federal Trade Commission. Under way are studies by Gort of the trend toward diversification of products by large companies, which some people believe is altering the competitive situation in various industries; and by Stigler of the effectiveness of rates of return on capital in guiding new investment and the movement of capital from one industry to another—a matter of the highest importance in an economy in which investment is directed not from some central point but by private enterprise.

The remarkable growth of government is another aspect of economic organization that is engaging us. The study of the growth of governmental expenditure in the United Kingdom just completed by Peacock and Wiseman; the earlier studies of governmental employment in the United Kingdom by Abramovitz and Eliasberg, and of governmental employment and expenditures in the United States, to which Lipsey contributed; Copeland's study of trends in governmental financing in the United States, in press; and Brazer's study of city expenditures, published during the year—these provide some of the facts useful for assessing and understanding this great change in economic organization, a major trend not only in the United States and the United Kingdom but other countries as well. We also began, during the year, a study by Dickinson and Nelson of the magnitude and trend of philanthropic activity in the economy, including changes in the division of responsibility between public and private philanthropy, which have been altered greatly.

Another, and substantial, group of our studies deals with financial organization and financial markets. One subject is the towering structure of debt and ownership, as revealed by the national balance sheet. A second subject includes the character and rates of growth of various financial institutions, on which an overall view is being provided by the studies of the flow of funds as well as of the national balance sheet; and detailed views of particular institutions, by the studies of pension funds, consumer finance, and mortgage companies, among others. And a third subject covers experience with particular securities and the markets in which they are dealt, including corporate bonds, government bonds, and mortgages.

Both the consumer finance study, just begun by Shay and his associates, and the pension study, which Murray had under way at the beginning of the year, focus on financial developments of extraordinary speed and importance. These developments have therefore attracted much attention and raised important controversial issues and questions of fact. We may expect that many people will be interested in the answers that we seek to provide in the study of consumer finance—on the business of consumer

financing, including sources of funds, charges, costs and earnings, and the effects of governmental regulations on the competitive position of different financial institutions; on consumers' use of credit in relation to the financial and other circumstances of families, which has a bearing on the impact of credit controls and regulations of various sorts on different families; on trends and fluctuations in consumer credit volume, terms and lending standards, and their relations to trends and cycles in consumer spending and in the production of consumer goods and services.

This year's work includes also several studies dealing with still another aspect of economic organization, namely, international economic relations. Recently published are the study of international financial transactions by Morgenstern, of middleman transactions in world trade by Lichtenberg, and of fluctuations in trade balances by Mintz; and studies still under way include Woolley's of the structure of world trade and payments, Karreman's world transportation account, and Michael's analysis of international capital movements. These are all designed to trace the network of economic relations among countries and thus provide a basic record with which to approach pressing questions.

Of major importance among the tasks of economic organization is to lessen the susceptibility of the economy to depression. We have not neglected the problem. In 1920 the United States was hit by one of the sharpest business contractions on record. In the midst of the depression that resulted, a President's Conference on Unemployment was held to consider relief for the millions of unemployed, who perhaps numbered one out of every six or seven persons in the labor force. During the formulation of emergency measures, the members of the Conference—businessmen, labor leaders, economists, and government officials—proposed an investigation of the whole problem of unemployment and of methods of stabilizing business and industry so as to prevent the suffering that results from depression. The committee that was set up to consider the question asked the National Bureau, which had been established the previous year, to investigate the relation of business cycles to unemployment. The Bureau agreed, and thereby was launched upon a series of studies of business cycles—their character, their causes, and the policies suitable for combating depressions—that has taken a good share of its energies ever since.

The study by Burns and Moore of the post-war business cycle, under way, is a major item in this long series. Consider the relatively greater stability of income, employment, and production enjoyed in this country since the war, which I listed among the important economic advances during this generation. This stability conceivably could be no more than a happy accident. The more clearly we can understand its causes, the more confidently may we make our plans and the better guard against sources of trouble. The study of post-war business cycles therefore attempts to explain why they differ from prewar cycles.

Other studies of the year contribute both to the scientific analysis of business cycles and to the development of practical business indicators. An example is Stanback's study of postwar cycles in inventory investment, presently nearing completion.

Methods and Results

In these, as in the studies I have not been able to mention—studies of the character and causes of long swings in economic growth, of the trends and the cycles in money supply and demand, of fluctuations in costs and profits, of the individual income tax, of consumer purchases and the factors that determine them, and of still other aspects of economic life—we try to determine the facts objectively. This means, among other things, being willing, and going to the trouble, to make one's data available for inspection and use by others. Hickman's forthcoming third volume, which concludes his basic study of corporate bonds, as well as the elaborate appendixes to Moore's volume—and to Kuznets' and Kendrick's and Ulmer's and those of still others of our staff—are examples of the value, and of the cost, of following this policy.

It means, also, taking the pains to ensure,

as well as it can be ensured, the accuracy of one's results, and to lessen—one cannot eliminate—the possibility of misunderstanding and misuse of them. This is the reason why the National Bureau requires each member of its staff to subject his work, before it is published, to scrutiny from every side. After each reading—by other members of the staff, outside experts, and members of the Board—improvement usually follows. Sometimes a considerable rewriting is stimulated and the improvement is very great indeed. On occasion, our critics suggest a drastic restudy of the subject involved. When they are right, as they are at times, this painful course is followed if resources and patience permit; otherwise the study is abandoned. When no serious questions are aroused in our critics, we do not consider the time we have waited to be wasted, for we gain confidence in the results and in the clarity with which they have been expressed.

Future Objectives

The plans we have for the future accept as premises the principles that constitute the basis of our organization and our work: objectivity in the determination of the facts, impartiality in their interpretation, concentration on topics of national importance that are susceptible of scientific treatment, divorce of our findings from recommendations on policy, control by a Board of such character and composition that our findings will carry conviction to all sections and groups.

The departure from our previous program lies mainly in a greater emphasis on the analysis of policy issues, in giving more attention to countries other than the United States, and in devoting more of our resources to topics, such as economic growth and the role of government in economic life, that are not only of great importance but the study of which may be expected to profit abundantly from research in the National Bureau's tradition. We have already made a start in these directions.

In line with the stated objectives, we expect to concentrate effort on four interrelated areas: (1) the development and interpretation of new economic data, and the improvement of important existing series that still fall short of desirable standards, so that the pressing needs of our people for economic intelligence may be better met; (2) study of the process of economic growth and the conditions and policies—both public and private—that favor it under varying conditions; (3) analysis of the character and causes of economic fluctuations, and of the policies pursued or proposed for dealing with them; and (4) study of the impact of the rising trend of governmental activity on the growth, efficiency, and stability of the economy. If resources should permit it, we would add (5) study of the international economic relations of the United States, to assess the place of the country in the international economy, the developments that have brought us to our present position, and the tendencies that are moving us in desirable or undesirable directions.

This program of research is purposely put broadly in terms of areas of research rather than as proposals for specific studies. For the particular questions to which we can devote ourselves in any year, the order in which studies will be undertaken, the amount of time that can and should be given to any question—these must remain uncertain when funds are limited and plans are sketched for years ahead. And the uncertainties multiply when the plans deal with basic research. An element of flexibility is, clearly, essential to true research.

The problems of economics have shifted as the economy has changed and the science advanced. So have the particular problems to which the National Bureau devotes itself. The demand for objective determination of important economic facts persists, however, and grows; and we continue to devote ourselves to meeting all we can of this demand.

If we have attained a measure of success in our endeavors, it is because we strive to keep warm in our hearts the respect—and the passion—for facts that constitute the true love of science.

Topics and Critiques

PROD Changes to ABS

Four years ago on a summer afternoon, atop the lovely hill from which the Center for Advanced Study in the Behavioral Sciences overlooks San Francisco Bay, three social scientists discussed a newsletter to circulate new research ideas among their colleagues. The result of their confabulation was *PROD*. At first a typewritten journal, *PROD* underwent successive changes in the course of time. Its format became clearer, an annotated bibliography was added, and along with more consistent editing, its articles lengthened and broadened in scope.

With Volume IV, *PROD* now takes on a new name, *The American Behavioral Scientist*. To be sure, we had some hesitation in changing Karl Deutsch's ingeniously cabalistic title, for which we held a certain and, we know, not solitary fondness. But the desire to expand is always strong, not according to Parkinson's Law of the Expansion of Functions to Meet Income (since our books still show nought but deficits) but because we have always felt that the discipline of political science depends directly upon a general social theory based on the problems of psychology, economics, sociology, and philosophy.

Thus we venture towards a synthesis sought by many political philosophers in the past and a few in the present. Today the majority of voices deny that the abundant and diversified materials of human behavior can be drawn together and discussed fruitfully as a whole. But whatever the prognosis, *The American Behavioral Scientist* will encompass as much of the study of man as possible, searching continually for a universe of discourse in social science. We think that the search will be facilitated if readers will write for its pages and comment upon its contents.

The thought and news of behavioral science are found in a hundred places. The *ABS* will try to give them focus and succinct expression. Articles from all the behavioral disciplines have already been published; the major change in subject matter will be the appearance of articles, news, and notes about work without regard to its relevance to political science *per se*. Finally, the *ABS* is intended to be an independent expression of a great profession, the study of man. Having neither ties to associations nor elaborate restrictions, it can hope to express frank judgments on the condition, prospects, and policies of behavioral science in the present age.

Scientists Deplore Their Public Futility

Recently the leaders of two associations of American natural scientists coincidentally issued statements deploring their impotence in public policy. On July 7 the Committee on Science and Promotion of Human Welfare of the American Association for the Advancement of Science urged members to stimulate discussion and commentary among themselves and with the public on "the social consequences of technological progress," relations between research and military activities, international aspects of science, government support of research, the social responsibility of scientists, and their integrity.

A special editorial by M. Stanley Livingston in the June 27 *Federation of American Scientists Newsletter* declares: "Unfortunately the FAS has consistently failed to make a significant impact on the public at large, and seemingly does not have the organizational experience, or ability to mount such a campaign." We might recommend to both groups a joint action program with political and other social scientists, though we appreciate that even political scientists lament their lack of influence. The natural scientists might well request the loan of a group of behavioral scientists to help them clarify and promote their ideals. After all, the social scientists would call them in if they had to construct automated mazes or predict the weather.

Educators and Student Rebels

In the world of collective action, nothing is so uncertainly gratifying and exasperating as student political behavior. Whereas no one, aware of the possibilities of education in the 20th century, can have regarded the University of Havana as anything but in need of drastic reform, the sight of a Castroated student group governing the University is a shameful spectacle. Japanese students, drunk on ideologies and hammering down the gates of moderate government, incite counter-aggressive urges. On the other hand, the Turkish students who led the revolution against a government well on its way toward destroying the validity of the Republic are a source of pride and inspiration.

But the old Western democracies have their problems as well. The French government, using the sanction of the "withdrawn subsidy" (the proverbial lesson to subsidyphiles), cracked down on the student union at Paris for passively if not actively supporting certain positions of the Algerian rebels. Meanwhile, in Westbury, L.I., American education again displayed how boobery generates from a lack of issues of life and death. A student leader was unexpectedly offered an American Legion award for good citizenship and refused it on the spot, declaring that he could not accept an award from an organization whose principles he did not respect. Instead of calmly passing over the incident, the school administration, responding to the "challenges of education" they so eagerly expound in matters of higher salaries and fancier buildings, descended upon the student like a pack of wolves, denying him two other awards to which he was entitled and apologizing to the Legion even in anticipation of its protest, thus out-Heroding Herod. Such is education for Character!

A Year of Translations

In 1959-60 the *ABS*, as *PROD*, published 17 translated articles. They represented social scientific thought in France (4), Italy (4), Russia (4), Germany (2), and Belgium, Japan, and Cuba (1 each). Late in the publication year readers were asked to comment on the series, and 75 did so. Almost half the group responded to the request for adverse comment. A half-dozen were generally opposed to the translation series. The most frequent criticism was of the quality or selection of material. We agree, in part: by American standards the quality of foreign social research is seldom high; also, lengthiness forced us to pass over some good work. The former seems to be confirmed by the fact that practically no one, in reply to our request, suggested further foreign articles for translation.

Thirty readers praised the venture, and many criticisms were leavened with favorable comments. Social research translations were held necessary and not available elsewhere. The availability of Soviet material, whatever its quality, was especially welcomed. Some 40 readers praised particular articles, notably Fernand Braudel's "History and the Social Sciences: The Long Duration" and Giorgio Braga's "Outline of a Typology of Adherence to Communism." Other preferences were mixed, *e.g.*, a survey of "The Sociological Sciences in France" was liked by seven readers and disliked by four.

Unquestionably, we have a varied audience of strong opinions. Unquestionably, also, very few U.S. soical scientists read works in other languages. As one result of our first year's experience, translations will no longer appear in separate issues, and readers will find fewer complete translations. We will place greater emphasis on publishing carefully abridged translations. Readers will probably also note an increased preoccupation in the months to come with developments in mechanical translation, new forms of documentation, and research services. The problem of translation, we feel, is tied closely to that of intelligence-intake in general. It is not merely coincidence that the machines being developed for data processing are being modified for translating tasks.

The Dawn of Mechanical Translation

by DIANE MONSON

Cryptanalysis, linguistics, literary analysis, content analysis, and translation have been edging together in theory and in method for some years. Since World War II a new invention complex has appeared that emanates from and speeds up the amalgamation of fields. This is mechanical or machine translation, a socio-mechanical invention to promote trans-linguistic communication. Working largely with general purpose computers, a hundred men and a score of organizations have brought MT to the stage of rough models. If several of the fundamental problems are solved in the next generation, "One World" in the language of science, literature, and politics may begin to materialize. This article is based in part on the author's questionnaire survey of the organizations and individuals presently concerned with MT.

The despair of the scholar who must incorporate the multiplying literature of his own field is compounded by the fact that the literature is often expressed in language not his own. The movement to invent a system of mechanical translation to facilitate the use of scientific materials originating in foreign languages was born as World War II ended. In this magazine's inquiry of 31 persons presently concerned with problems of mechanical or machine translation (MT to the insiders), three men stated that the concept first occurred to them in the period 1940 to 1945. Certainly, the concept was current in the literature of science fiction by that period, if not earlier.

THE GROWTH OF AN IDEA

The seminal idea of the feasibility of MT probably developed in discussions between Warren Weaver of the Rockefeller Foundation and A. D. Booth of London in 1946. Reflecting upon wartime experience with cryptanalysis and languages training, Weaver theorized that translation might be routinized and systematized. He felt that all language might ultimately be shown to contain fundamental elements that could be programmed into a computer and that a digital computing machine having the necessary storage capacity could make a dictionary translation. This early orientation toward the use of general purpose computers is important in explaining the direction of later events; thus far the *programming* of successive types of general purpose machines has been emphasized, rather than specially constructed translating devices. As Sydney Lamb of the University of California puts it, "Most of the people in this field (MT) are looking forward to translation not by a translating machine as such but by a general purpose computer. Gilbert King of IBM is the only project leader I know of who is working on a machine for translation. The other groups are working on systems designed to run on general purpose digital computers." Support for Dr. King's work has come from the U. S. Air Force.

As early as 1947, at the Institute for Advanced Studies at Princeton, a program was designed by Booth and D. H. V. Britten to permit a computer to look up words automatically in a stored dictionary. Approached by Warren Weaver in April, 1947, Norbert Wiener took an entropic view. Undiscouraged, in 1949 Weaver prepared a memorandum entitled "Translation," an imaginative exercise ranging from details of construction to far-fetched hopes for discovering universals beneath languages. He sent it to two hundred acquaintances. It evoked much interest and had some impact upon the prompt formation of research projects at three universities. In fact, 1949 seems to have been the critical year in the first stage of the MT invention process; four out of 28 experimenters who mentioned the year in which they first became interested in the

subject named 1949. Five became interested between 1940 and 1948, and 19 between 1950 and 1958.

Problems of linguistics became apparent at an early stage. Were the key problems mechanical, social, or psychological? If we accept Alfred de Grazia's concept of invention, all invention is social, but many specific instances are so obviously dependent upon setting non-human behaviors into motion that they may be termed mechanical, chemical, and so forth. In this sense, mechanical translation is a socio-mechanical invention complex, for the progress of MT seems to depend principally upon the solution of communications and linguistics problems. As one inventor declared: "One is trying to devise a programme not hardware, therefore there is no question of invention." And another wrote, "You seem to associate all MT work with the development of a machine. This is not the case. Almost any large computer could be used, and much work can be done without reference to any machine whatsoever."

So, early in the 'fifties, attention was turned to devising programs that could handle problems of word order and of the multiple meaning of words. In 1950 Erwin Reifler of the University of Washington discussed the use of human pre-editors and post-editors, whose respective functions were to remove intrinsic ambiguities from the original text and to reshape the crude output of the computer to a reasonable literary form.

In 1951 Yehoshua Bar-Hillel, then at the Massachusetts Institute of Technology, turned his full interest to mechanical translation, and in the following year the first conference on MT convened there. The National Science Foundation thereupon entered the picture and has acted a major role ever since in sponsoring MT development. In 1954 a demonstration showed that an IBM 702 general purpose computer might be programmed to translate some Russian sentences into English. The first issue of the journal *MT* was published in the same year, to promote intercommunication among interested persons.

Since 1954 the number of persons and research units engaged in MT development has increased sharply. Our inquiry, conducted in the Spring of 1960 by asking persons involved in MT to name others similarly active, turned up 97 persons, all but 18 in the United States, who may be considered "the inventors at work." At present there are 11 American groups engaged in various aspects of mechanical translation research with federal government support. The total number of organizations involved, if all others using university and private means are counted, is about 20.

The Motives Behind MT

The burgeoning activity in MT raises the eternal questions people ask of inventors: "Why do they do it? What's in it for them?" A number of men involved have given us frank answers to this query. Undoubtedly the sheer intellectual challenge is very important. The electronic computer developments of the past few years have pulled into orbit a number of groups seeing some special applications, such as game theory for econometricians, demographic predictions for social statisticians, and control systems and servomechanisms for businessmen. It is not surprising that they should have attracted some men who saw the enormity of the problem of linguistic barriers. Given a few conferences, a small journal, and the sparks struck off by men such as Warren Weaver, the social combustibles ignited.

The inventors themselves shape this interpretation. Thus, when asked what prompted his interest, one man stated it was "an extension of an older interest in mechanical or electrical automata." According to another, "when I first read *Machine Translation of Language* [by William Locke and A. Donald Booth, published in 1955 by Wiley and Sons] I realized that Information Retrieval and M.T. had many similar problems." Still others mentioned "Warren Weaver's pioneering article, innovation of high speed computers, mathematical and linguistic studies at UCLA (1949)" or "discussions at the International Conference on Scientific Information."

Oskar Reinson of the U.S. Air Force writes: "As a philologist, I had followed closely the theoretical arguments regarding the translatability of languages by machines. From the theoretical point of view, the feasibility of MT appeared rather farfetched; however, the practicability of MT certainly was not ruled out."

To quote Yehoshua Bar-Hillel:

> After reading Wiener's *Cybernetics*, I started thinking on the connection between Cybernetics and my own prior work on *Syntactical Categories*. This interest was strengthened by talks with Zellig Harris who then visited Israel (1949). It has always been my opinion that the cash value of many theories, including those of linguistics behavior, might well be determined by seeing how a machine would behave if programmed in accordance with this theory. My interests in the "mechanical" aspects of syntax stem from 1935 when I became acquainted with Carnap's work and were strengthened by reading Ajiukiewicz's *Syntaktische Konnexitaet* in connection with my master's thesis on the logical antinomies in 1938.

The government, with an eye upon the Soviet Union, certainly added fuel to the flames. Yet almost none of the experimenters identify strongly with the government's motives. The motives of the inventors are individualistic and scientific; the government builds upon and uses their motives. In addition, some activity in MT was brought about by the pressure of higher-ranking personnel in an organization. Other features attracting men to MT, cited by men in the field, include "money," "glamor," "scientific re-recognition," "job openings," "wild science-fiction-like speculation"—and even the possibility of "attraction for cranks due to the difficulty to refute crazy ideas in this field without sounding dogmatic and reactionary." Whatever their initial motives, few men have left the small movement. The slight personnel drop-out is due to "lack of funds," "realization of incompetence," "very slow progress in the field," or to the lure "of more interesting work."

The Social Importance of MT

MT scientists were also asked about the social importance they attached to MT. Besides those who doubted or were not concerned with its impact were several who stressed that MT was "only a tool, a device" and who emphasized the need for critical technical inventions before MT could pretend to social importance. Others expressed enthusiasm for MT's probable influence on the access to foreign technical materials and exchange of information, as well as its use in aiding "mutual understanding through greater communication between diverse cultures." Between the two extremes were opinions that MT is "more propaganda than substance," that MT will have an "indirect influence on the style of scientific writing" as well as "revolutionary effects on the study and teaching of linguistics." By comparison, the official government justification for MT is the desire that the United States retain pre-eminence in science, medicine, military, and other fields; MT is to make readily available the fund of world knowledge, including G2 types of intelligence. On a more specific, technical level, the National Science Foundation is said to aid mechanical translation research due to its interest

> not only in the specific objective of the automation of translation but also in the broader implications that this research on language may have for the future of information processing, particularly in the fields of automatic indexing and abstracting and in the mechanization of systems for the storage and retrieval of scientific information.[1]

It is interesting to note that a Soviet researcher, in an article entitled "Machine Translation in the Soviet Union," envisions similar developments.

[1] U.S. House Committee on Science and Astronautics, Hearings, *Research on Mechanical Translation*, 86th Congress, 2nd Session, May, 1960, pp. 2-3.

The Social Network of Inventors

Relations among the MT inventors are curious and in some ways contradictory. They are competitive and cooperative. They know each other well and yet not enough. If more were known about the psychology and sociology of invention some of these matters might be clarified. First inquiries about MT researchers produced a core group of 17 names. Thirty inventors, including some of those in the core group, were asked whether they were personally acquainted with others on the list of 17. Whereas the 30 might have numbered about 500 acquaintances with the core group, in fact they had only 174. In 143 cases the name of a core group researcher was quite unknown to a respondent, and there were only 36 cases of acquaintanceship between the respondents and the core group *before the date of first interest in MT* out of a possible 500. There had been 97 personal contacts of one or more meetings between the 30 inventors and members of the core group in the six months preceding the survey, and 74 such contacts were planned in the forthcoming six months. The use of conferences and technical journals, as well as of gossip and word-of-mouth reporting, plays a major role in tying the inventing group together, despite their great geographical separation.

Technical Problems of MT

Divergencies are manifest in the technical approach in MT research, and there is some disagreement as to the state of development of various procedures. For instance, the director of one unit said that the provision of adequate input-output facilities was "primitive," whereas another said that they were "complete." Research competition is highly valued by the inventors as a spur to achievement. Yet, as in many historic cases of invention, it would seem that a more systematic pooling of findings would eliminate duplication of research effort, and here accelerate the completion of usable MT processes.

Among the less mechanical problems of MT input, logical processing, and output, the problem of pre-editing may be singled out for mention. The crux of the input problem is that the number of words prepared by either a hand-keypunch or a skilled human translator is about the same, whereas the need is to supply an input that can keep up with a very rapid output. Admittedly, it is felt that human translation or machine translation will always require some post-editing —although perhaps this can be done by the reader. Fourteen of nineteen inventors who ventured an answer to the question: "Do you foresee a time when human effort will not be required to prepare a foreign document for the translating machine?" replied "Yes," four "No," and one had strong reservations. But comments indicated the "time" might be four years, ten years, 100 years, or so far away "that there will be no need to use knowledge gathered in the last 2,000 years."

In the area of human translation of scientific material, one company expressed the viewpoint: "Even now, there is considerable reluctance on the part of scientists and engineers to make use of translated material when the point at issue is a crucial one. When they meet this situation, they generally turn to the material as it was written in the original language."[2]

Indeed, the problem areas discussed in Locke and Booth's *Machine Translation of Languages* are still applicable and timely. Congressional hearings on MT bring out this point. Several opinions can be cited. The primary handicap, as emphasized by Dr. Anthony G. Oettinger of Harvard University, is that so little is understood about semantics. Dr. Burton W. Adkinson of the NSF corroborates this: "The real tough part of it is the understanding of the language and developing a program for the computer."

The problem facing MT in programming is adequate provision for accuracy of translation, particularly for the scientist who requires a precise translation. Dr. Victor H. Yngve of MIT underlines this requirement:

[2] *Ibid.*, pp. 3-4.

Any quoted percent accuracy means very little, however, because of the difficulty of assessing less-than-perfect output. The trouble is that even if errors could be counted, it is difficult to determine the relative amount of loss caused by different kinds of errors. . . . But if I were pressed for a figure I would say that realistically we can't reach an accuracy of 50 percent at present. But even if we could achieve 95 percent accuracy what would it mean? Would it mean that we would miss the 5 percent of important new material and get the 95 percent of already known material?

The problem of accuracy thus far seems to outweigh the problem of economic feasibility, which would probably be resolved once a process of accurate translation was understood. The major factor in the machine translation is the preparation of the punch-paper tape by a typist—which is a more costly operation than actually performing the translation. However, conjecture places machine cost at less than the cost of translation by a single human translator, based on cost per word; as reported in a Congressional hearing, machine cost will eventually be less than the "average cost of translation by hand at $12 per thousand words, or say about 1 cent a word. . . ."

The Future of MT

This last estimate of the cost factor is unusual because, on the whole, the scientists involved in MT are very reluctant to predict the completion of any phase of the MT process. The general tenor of this conservatism was expressed by Dr. Oettinger, who thinks such predictions "idle," since the present stage of development is primitive. The few who did venture a response to our inquiry estimated that the volume of materials translated by machine would range from none to five million pages per day in 1960, and from 1,500 pages to 100,000 pages in the year 2000. They also differed as to whether there would be a steady increase or a leveling off in translation production. Estimates of the number of machines programmed for translation work by the end of 1960 ranged from none through five, whereas for the year 2000 estimates ranged from one to 50,000 machines. All the respondents held that a very high proportion of the materials translated would be in the natural sciences, with some attention to social science materials and negligible fiction translations.

On May 10, 1960, the press carried an announcement of a machine developed at the IBM Research Center at Yorktown Heights which could translate Russian literature into "rough, but meaningful English." As to the machine's translation capacity, however, the press accounts varied from "40 words per minute" to "35 words per second." In fact, the opinion was expressed that the announcement was primarily to publicize the opening of the May Hearings before the U. S. House Science and Astronautics Committee. This may be true if Dr. Oettinger is correct in claiming that about all that can be done in machine translation now is (1) looking up words in "the dictionary" and (2) a certain amount of grammatical restructuring. As with the equally young and uncertain movement towards space travel, there are striking discrepancies as to dates of effective operation and widespread use of MT. Arguments thus tend to be reflections of temperament and articles of faith. But for the sanguine, "every great invention has appeared impossible to the many and difficult to most before its arrival, and very simple afterward."[3]

[3] *Ibid.*, p. 17.

Is the Senate's Foreign Relations Research Worthwhile?

by MORTON HALPERIN

The Senate Foreign Relations Committee has made an ambitious attempt to tap the academic community for information and advice on foreign policy. The twelve studies that resulted have certain drawbacks as social science, yet they also can have some influence upon the content of American foreign policy and upon future methods of shaping policy. The author is presently a Research Fellow at Harvard's Center for International Affairs.

The Senate Foreign Relations Committee is determined to play a major role in policy making, yet lacks the requisite expertness. Although it cooperates closely with the State Department and receives much information therefrom, it does not get (and cannot expect to get) criticism of policy and alternative policy proposals. To supply these needs, early in 1958 the Committee called for bids for a series of studies on American foreign policy.

The response indicated the extent to which social (and physical) scientists have committed themselves to policy research. Sixty groups offered to prepare one or more of the fifteen studies outlined by the Committee. Of the twelve published studies, five were prepared by university research centers (Columbia, Harvard, MIT, Johns Hopkins, and the University of Pennsylvania), four by private research concerns, and one each by the Maxwell School of Citizenship and Public Affairs of Syracuse University, Northwestern University's Program of African Studies, and the Council on Foreign Relations.[1]

The reports were prepared according to a generally similar pattern. Most organizations set up committees to discuss their assigned problem over a period of several months. Members represented the disciplines of political science, economics, sociology, history, and public administration, including in some cases the physical sciences. The studies were drafted by one or two individuals who drew together the various contributions and suggestions, and at least some of the studies suggest that progress has been made in integrating diverse scholarly approaches into valuable policy proposals. Each study begins with a summary of the report and its recommendations. These have been skillfully done; they reveal the orientation of the studies and serve as indexes to their ideas.

In mapping the areas of study the Committee apparently hoped for a comprehensive review of American foreign policy. The studies of Asia, Africa, Western Europe, and the USSR and Eastern Europe provide excellent background material as well as comments and suggestions on American policy. The African and Asian studies are valuable sources of information on the bewildering domestic politics of the two continents, though they are too general to be of use to a specialist in any geographical sector. The area studies do not blanket the world, however. The Committee decided not to publish a study of the Middle East prepared by its own staff, and did not contract for a general study of Latin America because its Latin American subcommittee simultaneously contracted for a series of such studies.

In eight other studies the Committee sliced into the foreign policy problem in divergent ways. These reports overlap to some extent, leave at least one gap, and vary greatly in quality and usefulness. Their value might have been increased if some effort had been made to coordinate them, perhaps by an initial conference of study directors and an exchange of working drafts.

[1] The Committee decided not to publish one study, and in two instances two proposed studies were combined in a single volume.

FOREIGN AFFAIRS POLICY RESEARCH

United States Foreign Policy, a series of studies prepared for the Senate Committee on Foreign Relations 86th Congress, 1st and 2nd Sessions, 1959-60. (It is expected that the all the studies will be combined and printed in one volume.)

(1) "Worldwide and Domestic Economic Problems and Their Impact on the Foreign Policy of the United States." Corporation for Economic and Industrial Research, Inc., August, 1959.

(2) "Possible Nonmilitary Scientific Developments and Their Potential Impact on Foreign Policy Problems of the United States." Stanford Research Institute, September, 1959.

(3) "Western Europe." Foreign Policy Research Institute, University of Pennsylvania, October 15, 1959.

(4) "Africa." Program of African Studies, Northwestern University, October 23, 1959.

(5) "Asia." Conlon Associates, Ltd., November 1, 1959.

(6) "The Operational Aspects of United States Foreign Policy," Maxwell Graduate School of Citizenship and Public Affairs, Syracuse University, November 25, 1959.

(7) "Basic Aims of United States Foreign Policy." Council on Foreign Relations, November 25, 1959.

(8) "Developments in Military Technology and Their Impact on United States Strategy and Foreign Policy." The Washington Center of Foreign Policy Research, Johns Hopkins University, December 6, 1959.

(9) "The Formulation and Administration of United States Foreign Policy." The Brookings Institution, January 13, 1960.

(10) "Ideology and Foreign Affairs." Center for International Affairs, Harvard University, January 17, 1960.

(11) "USSR and Eastern Europe." A Columbia-Harvard Research Group, February 14, 1960.

(12) "Economic, Social and Political Change in the Underdeveloped Countries and its Implications for United States Policy." Center of International Studies, Massachusetts Institute of Technology, March 30, 1960.

"The Study of Basic Aims of American Foreign Policy," for example, might have served as an excellent foundation for the other reports, but it appeared after most of them were finished and consists almost entirely of propositions too general to be of value by themselves. Meanwhile, a number of the other reports begin with their own statement of American aims. Coordination, or at least organization, seems to be called for here. Coordination also would have helped other studies to eliminate duplications of factual data and might have helped to sharpen the arguments supporting the policy proposals. The studies that were published last did make such use of early reports.

Nevertheless, the studies as a whole suggest that the social scientist can contribute substantially to policy making. The theories of the social scientist have not been perfected to the point where he can be highly confident of their application to policy problems, as the MIT study group noted. Decisions must be made, however, and the studies explicitly direct themselves toward the most competent analysis possible with the tools at hand. Methods of analysis and assumptions are pointed out clearly and early in each report.

The Major Policy Questions

The multitude of world problems facing America today may be grouped into: (1) problems of the developing areas; (2) the nature of the Soviet challenge; (3) the changing role of military power in the nuclear-missile age; and (4) the structures needed to develop policy and put it into practice. These categories overlap somewhat and leave some problems out of consideration, but they represent critical questions; each study deals with at least one of them, most studies with several of them.

Underdeveloped areas receive the most attention in the reports. Nine studies cite the challenge to America in the emerging nations, though eight of them do not take a comprehensive look at the problem. They provide a wealth of factual information on the developing areas but do not use sharp theoretical concepts to unify the material. The study of economic problems devotes considerable space to the underdeveloped areas but limits its scope to specifically economic problems. Thus it misses the point stressed by the MIT study: the interrelation of economic and other factors in modernizing a country.

The MIT study was developed in a working seminar of members of its Center of International Studies. The MIT group looked upon modernization as a single process. Their report argues that economic development, the development of a modern way of life and of democratic political institutions affect and react upon each other in a way that makes it dangerous to consider any single aspect in isolation. It stresses the problems of modernization and the severe limits of American policy, and also pinpoints the dangers and the possibilities of American aid. Its fundamental assumption is that a developing nation either will fail to modernize, or will stabilize as a dictatorship (of the right or the left) or as a democratic country. The United States' interest is to make the "third choice" seem more attractive and attainable to emerging people.

The MIT study identifies the stages of modernization and the economic, political, social, and psychological factors that retard progress at each stage. In doing so it synthesizes the earlier writings of several participants. Rostow's "take off" concept is integrated with Lerner's work on the psychological and sociological problems of modernization and with the study of political modernization with which Lucian Pye has been associated.[2] This integration of material makes the report especially valuable.

The MIT study argues that the problems of the underdeveloped areas would be acute, even if the Soviet challenge did not exist. However, the Soviet success in modernization presents a pattern that the underdeveloped states are likely to copy if the democratic method does not appear to be successful. The study of the USSR and Eastern Europe, prepared by a Columbia-Harvard research group, and drafted by Marshall D. Shulman of Harvard, agrees that American policy should focus on the modernization of underdeveloped areas, as the most likely way to check Communist expansion and to induce ultimate modifications of Soviet policies. The study further urges that the United States act to contain the Soviet Union while building up the underdeveloped areas, asking that "the United States and its allies be prepared to use a wide range of instrumentalities, military, political, economic, to ensure against the further extension of Soviet power and influence."

The two studies agree that the Soviet challenge is both serious and persistent, but also maintain that United States foreign policy has concentrated too greatly on dealing with the Soviet Union *per se*. The most effective policy would pursue other goals, independent of shifts in Soviet actions, while remaining alert to the danger of Communist expansion. The Russian study rules out the possibility of a major shift in Soviet policy that would lead to normal relations, but it stresses the value of seeking limited agreements on points where Soviet and American interests converge. Soviet conduct is still guided at least in part by Marxist principles; the Soviet commitment to a world Socialist state should be taken seriously. The United States must be prepared to sustain costs and sacrifices indefinitely; American policy should cease to fluctuate in response to shifts in Soviet policy, whether of the type that occurred over the Summit meetings or of less important kinds.

The authors of the Russian study conclude that if the issues are fairly and fully presented (as in their report), the American people will respond appropriately. Such expressions of optimistic faith, or of a contrasting, complete pessimism, are common to expressions on these issue. I would suggest that the problem is much more complex, and requires more serious study. No one has carefully examined American public attitudes toward foreign policy for over ten years.[3] There is a lack of current knowledge about attitudes toward foreign affairs, the

[2] W. W. Rostow, *The Stages of Economic Growth: A Non-Communist Manifesto*, New York: Cambridge University Press, 1960; Daniel Lerner, *The Passing of Traditional Society*, Glencoe, Ill. The Free Press, 1958; Gabriel Almond and James S. Coleman (eds.), *The Politics of the Developing Areas*, Princeton: Princeton University Press, 1960.

[3] Cf. Gabriel Almond's *The American People and Foreign Policy*, New York: Harcourt Brace, 1950. This is an excellent study, but outdated both by major changes in international politics and subsequent studies.

way they are formed, and how they interact in the policy process. Clearly, America needs a more firm and sophisticated commitment to world leadership than one based on simple faith in the rationality of the populace.

The Russian study also considers the military aspect of Soviet policy. Drawing upon the study of military policy in this series and on other standard works, it discusses Russian intentions and the interrelation of political and military factors. The studies of underdeveloped areas deal less satisfactorily with the military problem. The report on Asia asks further study of the problem of military defense; the African report ignores the problem entirely. The MIT study explicitly assumes that the military problem is being adequately handled and does not deal with it. The study of military policy prepared at Johns Hopkins University deals mainly with the strategic deterrent, however, so that the Committee has not been provided with any analysis of the defense problems of underdeveloped areas. Military experts have not given enough time to the detailed problems of military defense in particular localities, and area specialists have tended to ignore the military dimension.[4]

The military study is brilliant within its own scope, however. Its section on technological developments, drafted by James E. King, is probably the best available discussion of the future of "the balance of terror." It skillfully exploits Congressional hearings and other documentation, making it clear that the security barrier is not a bar to intelligent writing on military policy. It is only unfortunate that the study concentrates mainly on the impact of technological change on the strategic balance.[5]

Comments on the need for structural changes in the apparatus of American foreign policy are scattered throughout the studies, while the problem is systematically treated by the Brookings Institution. The Brookings study is most consistently oriented toward policy; its main proposal is that a new position of Secretary of Foreign Affairs be created to coordinate the Administration's foreign policy operations. If the Senate Foreign Relations Committee is serious about its role in making policy proposals, it might do well to adopt at least this suggestion and to work for its achievement. Governor Nelson Rockefeller has already placed the idea into the political arena.

A Major Drawback

One difficulty, inherent in research on foreign affairs policy, characterizes most of the proposals made in the reports. The foreign policy expert, *qua* expert cannot weigh domestic costs against foreign gains in making a policy recommendation. For example, several studies recommend dropping "buy American" requirements in foreign aid. The argument is very strong if only the foreign policy implications are considered (as is done in the studies), but the crucial problem is to balance domestic and international considerations. This is *par excellence* a political question, which would move the tasks of the experts onto even more controversial ground. Nevertheless, the studies remain useful to the makers of policy. They put forward clearly the arguments on particular proposals, and originate several new proposals worthy of national attention.

[4] For an excellent exception see John C. Campbell's *Defense of the Middle East: Problems of American Policy*, New York: Harper and Bros. (for the Council on Foreign Relations), 1958.

[5] For a discussion and evaluation of possible American military strategies see Henry Rowen's *National Security and the American Economy in the 1960's*, Study Paper No. 18, Study of Employment Growth and Price Levels, prepared for the Joint Economic Committee, 86th Congress, 2nd Session, January 30, 1960.

New Studies in Behavioral Science and Public Policy

This annotated selection is compiled in a periodic search of new issues of some 240 journals and reviews, including about 75 that are published abroad; recent book announcements; and fugitive materials recently published. Some items of special interest are boxed.

ALGER, C. F. *Non-Resolution Consequences of the United Nations and their Effect on International Conflict.* Evanston: Northwestern U. Program of Graduate Training and Research in Intl. Relations, 1960 (paper). Considers "how the United Nations has altered patterns of communication among nations, providing new routes of contact under new conditions; how it has had an impact on national policy; and how it has altered the career patterns and possibly the future behavior of participating individuals."

BARLOW, J. A., "Project Tutor." *Psych. Report,* VI (Feb. '60), 15-22. Reviews the advantages of the newly-developed "self-instruction devices," and the factors involved in their possible success.

BAGBY, P. *Culture and History.* Berkeley: U. of Calif. Press, 1960, $5.00. "A prolegomena to the comparative study of civilizations," using anthropological methods to outline a systematic and rational understanding of historical phenomena and developing a set of terms and definitions; draws examples from nine major civilizations.

BARON, S. W., "Newer Approaches to Jewish Emancipation." *Diogenes,* #29 (Spring '60), 56-81. The nature of Jewish emancipation from state restriction over the past several centuries, noting that "Jewish emancipation was as much a historic necessity for the modern state as it was for the Jews" and that "Assimilation in return for emancipation . . . was the underlying assumption in much of the pro-emancipatory debates and legislation."

BERNDT, C. H., "The Concept of Primitive." *Sociologus,* X (#1, '60), 50-69. The label "primitive" is no longer applied to the individual so much as to his culture, or society, or art; the newer interpretation is still flawed by its uncertain referrents, its confusion with mere difference, and its discriminatory overtones.

BRONFENBRENNER, M., "A Reformulation of Naive Profit Theory." *Southern Econ. J.,* XXVI (April '60), 300-09. Questions the realism and analytic usefulness of the profit theories of Schumpeter, Knight, and the institutionalists; "when both sophistication and iconoclasm seem to fail us, let us explore what can be done by naivete and simple-mindedness."

BURG, D., "Einige Betrachtungen zum Sexualproblem in der UdSSR." *Ost Europa,* X (May '60), 281-95. There is marked Soviet ambivalence about sexual morality; "Communist morality" is often uncertain and openly opposed or rejected.

CHURCHMAN, C. W., and P. RATOOSH, eds. *Measurement: Definitions and Theories.* N.Y.: Wiley and Sons, 1959. Meanings, theories, and problems of measurement in general and in the physical and social sciences. Articles by Clyde Coombs on preference and by Donald Davidson and Jacob Marschak on stochastic decision theory, along with others written by social scientists, are strangely less meaningful to the behavioral generalist than articles using natural science as a base.

CLAWSON, M., "Suburban Development Districts." *J. of the Amer. Inst. of Planners,* XXVI (May '60), 69-83. Rapid urbanization has produced major problems such as unnecessarily high costs, poor public services, and wasted land. Many of these problems could be met by a special unit of local government, the suburban development district, having very broad legal and economic powers, to operate through the development period only. It would make land use and development plans for the entire area and could purchase land and sell it to real estate developers and others.

CLARK, D., "Doctoral Dissertations." *The Executive,* III (May '60), 17-24. Where and how to locate them.

CLEVELAND, D. H., G. J. MANGONE, and J. CLARKE. *The Overseas Americans.* N.Y.: McGraw-Hill, 1960. Nearly 1% of American citizens live and work abroad; their effective performance requires an adaptable technical skill, cultural empathy, "intuitive imagination," a sense for political trends, and organizational ability. Suggestions are made for educating such people both in the U.S. and abroad.

DE GRAZIA, S., "Tomorrow's Good Life." *Teachers College Record,* LXI (April '60), 379-85. Punctures the myth of the modern abundance of leisure; uses historical comparisons, outlines the new non-work but also non-leisure demands on time, and challenges the assumptions on which the leisure concept is based.

DELAVENAY, E., "Machine Translation of Languages: Research and Organizational Problems." *Impact of Sci. on Society*, X (#1, '60), 26-43. History, methods, needs: operational MT will require scientific training in applied linguistics for those who will work with the machines, and better machine programming.

DE PICCIOTTO, S., "International Conference on Information Processing." *Impact of Sci. on Society*, X (#1, '60), 53-74. Reports the proceedings of a June '59 conference at Paris, whose topics included methods of digital computing, logical design of information-processing machines, pattern recognition problems, and "A Common Language for All Machines."

DE RIENCOURT, A. *The Soul of India*. N.Y.: Harper, 1960, $6.95. The philosophical, often mystical roots of Indian life.

DURAND, J. D., "The Population Statistics of China, A.D. 2-1953." *Population Studies*, XIII (March '60), 209-56. A complete presentation of the Chinese population record, with the methodology employed. Vast losses and sharp gains in certain periods show how unstable populations can be.

EELS, R. *The Meaning of Modern Business*. N.Y.: Columbia U. Press, 1960, $7.50. Toward the development of a corporate philosophy: the issues of social responsibility, the corporate realities and responsibilities, and the possible relations of the "well-tempered" corporation to the larger society.

FAYERWEATHER, J. *Management of International Operations*. N.Y.: McGraw-Hill, 1960, $9.50. Problems of American firms abroad: human relations, marketing, community and labor relations, organization, finance and operating policies. Most examples are drawn from Mexico, India, Turkey, and France.

FISHER, F. M., "On the Analysis of History and the Interdependence of the Social Sciences." *Phil. of Sci.*, XXVII (April '60), 147-58. A formal model of the world historical process that gives rigorous form to procedures and statements in the social sciences, thereby resolving an apparent contradiction between the possibility of fruitful historical generalization and the underlying methodology of the other social sciences.

FREIDES, D., "Toward the Elimination of the Concept of Normality." *J. of Consulting Psych.*, XXIV (April '60), 128-33. Critique of the "idealist" conception of psychological normality, arguing that "A shift in perspective in personality theory from one which looks upon man as normal or abnormal or somewhere in between to one which views him as having varying potentialities and limitations under varying conditions, seems to offer an orientation more viable, secure, and fruitful. . . ."

GERMAN, F. C., "A Tentative Evaluation of World Power." *J. of Conflict Resolution*, IV (March '60), 138-44. Tabular presentation of statistics and judgements "to summarize and compare the over-all past, present, and future strength of various nations by giving a numerical value to all factors considered relevant. . . ." The U.S. and USSR are closely matched, the UK ranks a poor third, followed by China, West Germany, Canada, Japan, France, India, Poland, and nine others, in that order.

GIPP, J. R., and R. LIPPITT, eds., "Consulting with Groups and Organizations." *J. of Social Issues*, XV (#2, '59). Nine articles commenting on the professional consultant's role in various fields, his ethical problems, etc., and including case studies of consulting with a national voluntary organization and a community development program.

GOEDHARD, N., "Determining a City's Needs and Desires." *Public Management*, XLII (March '60), 50-53. Asks citizen participation in 12 spheres of municipal planning and development.

GOULDNER, H. P., "Dimensions of Organizational Commitment." *Admin. Sci. Q.*, IV (March '60), 468-90. A factor analytic study of such dimensions among the members of a League of Women Voters group, supporting the hypothesis that "commitment to the specific values of an organization is distinct from commitment to the organization as a whole and further that commitment to one organization value is sometimes independent of commitment to another." Among the organizational elite, "some values, generally taken for granted, are discussed and may become new issues."

HALL, E. T. *The Silent Language*. Garden City: Doubleday, 1959, $3.95. The overseas animosity toward the U.S. is largely the result of our behavior; our real feelings are constantly communicated by the elaborate patterning of behavior which prescribes our handling of time, our spatial relationships, our attitudes toward work, play, and learning. Man as a cultural being is bound by these "hidden rules" so long as he remains ignorant of their nature.

HALL, E. T., and W. F. WHYTE, "Intercultural Communication: A Guide to Men of Action." *Human Organization*, XIX (Spring '60), 5-12. A point of view and a means of training for fitting administrators into any given culture.

HALSEY, A. H., "The Changing Functions of Universities in Advanced Industrial Societies." *Harvard Educational R.*, XXX (Spring '60), 118-27. Western culture's colleges and universities, in assuming added functions of research and professional training, have become more closely integrated with society in general and have increased their potential as sources of economic and social change.

HEARD, A. *The Costs of Democracy*. Chapel Hill: U. of North Carolina Press, 1960, $6.00. Sources and uses of funds in U.S. elections: ways of raising funds, effects on party management and nominations, effects on election results.

HOLMES, M. and D., "An Attempt to Categorize Cultural Variables in the Application of Psychodramatic Techniques." *Group Psychotherapy*, XII (Dec. '59), 308-14. Attempts to develop cross-cultural scientific validity of psychodrama.

HOLTZMAN, W. H., "Can the Computer Supplant the Clinician?" *J. of Clinical Psych.*, XVI (April '60), 119-22. As a processor of information, yes, but not in collecting or interpreting information.

HOWELL, W. C., and G. E. BRIGGS. *Information Input and Processing Variables in Man Machine Systems: A Review of the Literature.* (Ohio State U. Research Foundation) Washington, D.C.: Library of Congress, 1960, $4.50 (microfilm), $12.30 (photostat). Survey providing recommendations for the handling of information by the various sensory systems.

HUGHES, T. J., and D. E. T. LUARD. *The Economic Development of Communist China, 1949-1958.* N.Y.: Oxford U. Press, 1960, $3.60. The transformation of economic institutions, the first Five-Year Plan, land reform, private enterprise, the commune movement, and Soviet assistance, based largely on official sources.

HUSZAR, G. B. DE., ed. *The Intellectuals.* Glencoe: The Free Press, 1960, $7.50. Essays on the emergence of modern intellectuals, their natures and types, their roles, relations to modern ideologies, etc.

HOOS, I. R., "When the Computer Takes Over the Office." *Harvard Bus. R.*, XXXVIII (July-Aug. '60), 102-12. Electronic data processing (EDP) is increasingly widespread, but some theories of its supposed effects are not borne out. Personnel upgrading has not occured; rather, there is "a stratum of equally dull, repetitive, low-paid jobs—and only enough of them for considerably fewer workers. In fact, a number of classifications that were on the upper levels of the office roster are disappearing as automation takes over." There is also a trend towards "recentralization." The EDP elite is largely autonomous within the organization and its members pre-empt some industrial relations functions "yet ignore the turmoil brought into these peoples' lives."

INDOVINA, F., "L'Istituto centrale di statistica." *Passato e Presente*, #14 (March-April '60), 1934-45. History, organization, and operations of the century-old Italian central statistical institute, with a bibliography of its publications.

JEWKES, J., "How Much Science?" *Econ. J.*, LXX (March '60), 1-16. A British argument that we need much better criteria for determining the balance of resource investment between science and technology.

KAZIN, A., "Writing for Magazines." *Commentary*, XXX (July '60), 57-59. "Each offering in a magazine is now so carefully deliberated, weighed, written, and rewritten that we have forgotten the *joy* behind Chekhov's life as a magazine writer—the joy of not writing for the ages, of the easy tone, the marginal comment, the social joke, the joy of being as unserious as one is brief. . . ."

KIRZNER, I. M. *The Economic Point of View.* Princeton: Van Nostrand, 1960, $5.50. History of the successive conceptions held by the economists about their subject matter: the traditional economic point of view, economics as the science of wealth and welfare, as the science of avarice, and as the science of human action.

KOLAJA, J., and B. N. BUTLER, "Dimensions of Identification." *The Personalist*, XLI (July '60), 318-23. Distinguishes five classes of spatial identification that the ego may make (*e.g.*, with the entire physical organism, with various segments of the external environment, with the entire cosmos, etc.) and five corresponding classes of time dimensions.

LAZARSFELD, P. F. *Latent Structure Analysis.* N.Y.: Columbia U. Bureau of Applied Social Research, 1960, $1.00 (paper reprint). "Measurement, classification, and concept formation in the social sciences exhibit special difficulties; they can be met by a variety of procedures, and only a careful analysis of the procedure and its relation to alternative solutions can clarify the problem which the procedure attempts to solve." Presents logico-mathematical analyses of a number of such procedures.

LENNARD, H. L., and A. BERNSTEIN. *The Anatomy of Psychotherapy.* N.Y.: Columbia U. Press, 1960, $6.00. An interdisciplinary study of systems of communication and expectation in psychotherapy that lie outside the awareness of either therapist or patient, based on analysis of 500 therapeutic sessions.

LESSER, J., "The Wiener Library." *Contemporary R.*, #1130 (March '60), 141-43. A British research institute with a large collection of materials on National Socialism continues to study the "political, social and psychological aftermath of Nazi-Facism."

LEVITT, T., "Marketing Myopia." *Harvard Bus. R.*, XXXVIII (July-Aug. '60), 45-56. Shortsighted managements often fail to recognize that there is no such thing as a growth industry; "Industries that assume themselves to be riding some automatic growth escalator invariably descend into stagnation."

LINDSAY, K. *European Assemblies.* N.Y.: Praeger, 1960, $7.50. Their structures, functions, and activities, with special emphasis on relations between national parliaments and international bodies, 1949-59.

LISKA, G. *The New Statecraft.* Chicago: U. of Chicago Press, 1960, $5.00. A theory of foreign aid as an instrument of foreign policy: its political purposes, relationships between U.S. and the receiving countries, historical basis, etc.

MACKINNON, F. *The Politics of Education.* Toronto: U. of Toronto Press, 1960, $4.75. A critique of the Canadian public school system, advocating removal of government control from the administration of education, giving more responsibility to teachers and schools, and the creation of autonomous public trusts to operate schools.

MCNEMAR, Q., "At Random: Sense and Nonsense." *Amer. Psychologist,* XV (May '60), 295-300. Psychology but not every psychologist has successfully resisted the domination of statistics, which may lead to premature involvement in overly complex methods; the relationship between statistics and psychology is by no means ideal. An amusing and perceptive speech.

MAHONEY, T. A., T. H. JERDEE, and A. N. NASH, "Predicting Managerial Effectiveness." *Personnel Psych.,* XIII (Summer '60), 147-63. Selection and testing of specific measures of personal characteristics having together a high predictive efficiency in determining *general* managerial effectiveness.

MATHIESEN, T., "The Unanticipated Event and Astonishment." *Inquiry,* III (Spring '60), 1-17. Sociologists often neglect unanticipated phenomena, though astonishment is a typical and readily analyzable reaction; it may be a *means* (especially of social control), a conscious *end* in action, or a *condition* of action.

MILBRATH, L. W., "Lobbying as a Communication Process." *Pub. Opin. Q.,* XXIV (Spring '60), 32-53. Analysis of the Washington lobby process: "A communication model does not explain all the variables involved in any given decision, but it does include all the variables involved in the lobbying process" and is "the simplest explanation which accounts for the known evidence."

MILLER, G. A. *Plans and Structures of Behavior.* N.Y.: Holt, 1960, $5.00. Attempts to discover "whether the cybernetic ideas have any relevance for psychology" by interpreting the human organism and its behavior as an information-processing machine.

MOUNIER, P. E., "Un nouvean proletariat: les refugies." *Esprit,* April '60, 689-706. Refugees from Fascism, Communism, anti-colonialism, *et al.,* numbered 126,000,000 between 1933 and 1957; they have presented a number of countries with a whole set of new social problems.

MULLINS, C. J., "Selection of Creative Personnel." *Personnel J.,* XXXIX (May '60), 12-13. Partially successful attempt to establish the validity of nine Guilford creativity tests in predicting relative creativity among a group of research scientists.

MYRDAL, G. *Beyond the Welfare State.* New Haven: Yale U. Press, 1960, $4.50. Examines and compares government economic planning in wealthy Western nations, Communist nations, and underdeveloped non-Communist nations.

NEHRU, S. J., "Democratic Decentralisation—A Historic Step." *A.I.C.C. Econ. R.* (India), XI (Jan. 16, '60), 21-25. Inaugural address for the decentralization program, which relies on administrative *panchayats* and cooperative unions to manage economic affairs and to develop political consciousness within each village.

NIEBUHR, R. *Rheinhold Niebuhr on Political Philosophy.* N.Y.: Scribners, 1960, $6.50. Selections presenting his evaluation of the moral-philosophical crisis in Western culture; his philosophy of politics' role in determining man's faith; ideas of the ways politics do and can work; the relations of politics to Christian ethics and to moral national and international action.

NOKES, P., "Purpose and Efficiency in Humane Social Institutions." *Human Relations,* XIII (May '60), 141-55. Humane institutions—*e.g.,* schools, mental hospitals—"satisfy so many secondary needs, both individual and social, that efficiency is not a necessary condition of their existence." This tendency is unfortunate, the consequence of "the tendency of humanitarian goals to be set by those who have no responsibility for implementing them. . . ."

NYE, I., and E. MACDOUGALL, "Do Families have Subcultures?" *Soc. and Social Research,* XLIV (May-June '60), 311-16. There are noticable differences in value systems and role definitions among supposedly similar middle-class families; such family patterns are a microcosm whose changes can be studied to further knowledge about the nature of culture and its processes.

KRISTOF, L. K. D., "The Origins and Evolution of Geopolitics." *J. of Conflict Resolution,* IV (March '60), 15-51. The uses and misuses of past and present geopolitics; "Modern geopolitics, like politics, is not tied to any specific ideology, but, in contrast to the geopolitics of Aristotle and Bodin, it is never neutral; it is always influenced and guided by some sort of political philosophy and a Weltanschauung which includes a concept of the proper man-nature relationship."

PANOF, D. J., "Machine Translation and the Human Being." *Impact of Sci. on Society,* X (#1, '60), 16-25. The development and future uses of MT from the Soviet point of view.

PAPANEK, G. F., "Framing a Development Program." *Intl. Conciliation,* #527 (March '60), 305-72. Criteria to be used in determining the composition of technical assistance and development programs, regardless of size or administration; the two most general concepts are efficiency and consistency.

PHILLIPS, H. P., "Problems of Translation and Meaning in Field Work." *Human Organization*, XVIII (Winter '60), 184-92. Notes the innumerable subtleties that are likely to be lost in verbal translation (here, Thai to English) and reports a procedure to reduce error, using an interpreter in conjunction with an assistant to record an informant's data in his native language, with subsequent analysis.

POLLARD, J. A., "Emerging Patterns in Corporate Giving." *Harvard Bus. R.*, XXXVIII (May-June '60), 103-12. New mechanisms that guide and encourage the growth of corporate contributions, especially to education.

RICHARDS, A. I., ed. *East African Chiefs*. London: Faber and Faber, 1960, 42s. A study of 14 Uganda and Tanganyika tribes of varying traditional systems of government, demonstrating the transition from hereditary and client chieftainship to something approaching British concepts of local government; includes analyses of 1,154 career histories of chiefs at different administrative levels.

SAARESTE, A., "Quelques remarques sur le rapport entre la structure d'une langue, particulierement de son vocabulaire, et le caractere de la Nation." *R. de Psych. des Peuples*, #2, '59, 189-97. Examples of and means of scientifically invesitgating relations between national vocabularies and psychologies.

SCHELLING, T. C. *The Strategy of Conflict*. Cambridge: Harvard U. Press, 1960, $6.25. Essays on the theory of games, arguing that "there are enlightening similarities between . . . maneuvering in limited war and jockeying in a traffic jam, between deterring the Russians, and deterring one's own children."

SCHILPP, P. A., "The Impact of John Dewey's Philosophy upon American Education." *Chicago R.*, XIV (Spring '60), 97-125. Argues that Dewey's philosophy—as opposed to that of his would-be disciples—"has improved the quality of American education more than the work or the ideas of any other single American, living or dead."

SIEGEL, I. H., G. S. BECKER, D. M. KEEZER, R. A. FREEMAN, B. H. KLEIN, and H. H VILLARD, "Investing in Education and Research." *Amer. Econ. R.*, L (May '60), 340-78. Papers and discussion on the role of scientific research in stimulating economic progress. One conclusion is that college education does not evidence underinvestment in terms of direct returns, but external or indirect returns would seem to justify increased expenditure.

SILVING, H., "Psychoanalysis and the Criminal Law." *J. of Criminal Law, Criminology and Police Sci.*, LI (May-June '60), 19-33. Psychoanalytic findings cast new light on the problem of "responsibility" and on some of the assumptions and methods of criminal law, but such findings must be carefully applied to maintain consistency with the aims of a constitutional, democratic society.

STEIN, M. R., A. J. VITICH, and D. M. WHITE, eds. *Identity and Anxiety*. Glencoe: The Free Press, 1960, $7.50. Multidisciplinary essays on the sources of identity and anxiety in modern society—among them, work, politics, education, religion, race, etc.

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Bhave's Sarvodaya Society

(Continued from page 7)

and changes in village agricultural and sanitation techniques, which Bhave attempts to institute in the course of his travels. This type of social knowledge is necessary not only for India, but for all areas where people are attempting the task of social reconstruction on a rural communal basis.

More comparisons are also in order between Bhoodan and Communism, because although there are some theoretical and practical differences between them, there are also some similarities. There may be Communist means that can be successfully utilized in India and, in turn, the means of Bhoodan might prove applicable to Communistic societies. Most important for the West, the principles and practices of Bhoodan may prove an effective answer to the aspirations for change that are sweeping the underdeveloped countries of the world. Bhoodan's blend of non-violence and moral persuasion may prove more desirable than Communism to the populaces of the emergent nations.

Whatever else may be said for Bhoodan and Sarvodaya society, it deserves observation for its inherent value in effecting social change in India. What happens in an Indian village today presages to a great extent future developments throughout Asia and Africa. If we wish to influence that future we must know what is occurring in the present, and select our means within the framework of the possible.

An Institute for National Security Affairs

by CHARLES E. HUTCHINSON

In spite of prodigious inventiveness and massive expenditures for national security, the United States has not conducted coherent research on the policy of security. A unified government program for fundamental and applied research in the field of national security would do much to unify practices and to eliminate gaps in the communications between one security operation and another: so suggests Dr. Hutchinson from his perspective as Chief, Behavioral Sciences Division, Air Force Office of Scientific Research. The opinions he expresses are his own, and do not necessarily reflect the policies of the Air Force Office of Scientific Research or any other Air Force agency.

Senator Henry M. Jackson, writing in a recent issue of *Foreign Affairs*, said: "The plain fact is that good policy demands *both* good men and good machinery. And though it may be true that good men can triumph over poor machinery, it is also true that they are more effective working with good machinery.

It has been almost 13 years since the Congress took a look at the organization of the Government for making and executing national security policy. The National Security Act of 1947, which created the National Security Council, was essentially a codification of the lessons of World War II.

The new means of warfare have made obsolete ancient distinctions between foreign and domestic policy. We have seen a multiplication of the material resources required. Wholly new demands upon our intellectual resources and new problems of integrating science and politics have arisen."[1]

The writer learned of the interest of the Subcommittee in the fall of 1959, and was encouraged to suggest means for the fuller use of research in behavioral science in formulating national security policy. The proposal that follows is one result. It aims at tapping the behavioral scientists' reservoir of ideas and skills to supply new concepts and assessment techniques to those conducting foreign and domestic policy.

One major objective of any such plan is to develop closer ties between the university seedbeds of ideas and research and the training institutions for Washington bureau personnel, on the one hand, and the government agencies that must cope with the complex of problems that require day-to-day decisions on the other. Walter W. Rostow, of the Center for International Studies at MIT, has pointed out that: "There is an enormous gap between the best level of university thought . . . . and the thought ultimately brought to bear on high policy decisions."[2] At present, university scholars are usually at a disadvantage in debating current issues with bureaucrats because they do not have easy access to current classified intelligence. Yet whenever innovation is needed, university scholars have ample contributions to make. Though the primary focus of the proposal is to suggest ways in which additional resources can be used in the governmental policy process, the proposal also may contribute to improved university research and training.

The proposal does not involve any shifts of authority in the Executive branch; thus it might be adopted through administrative action. This would not be desirable, however expeditious it might be. An adequate program to use behavioral science resources in support of national policy involves a considerable break with tradition. It demands emphatic recognition by both the Congress and the Executive branch. Therefore it is strongly recommended that any such plan be undergirded by a charter from Congress.

[1] "Organizing for Survival." *Foreign Affairs*, April, 1960.
[2] J. "The Case of the Fertile Gondolas." *Harvard Alumni Bulletin*, May 25, 1957.

THE INSTITUTE FOR NATIONAL SECURITY AFFAIRS

The number and complexity of problems facing the government of the United States are certain to increase in the foreseeable future. There are a number of obvious problem situations: the increasing number of nations with nuclear devices, the rapid rise of underdeveloped countries driven by nationalistic aspirations, the growing resources of Communist bloc nations and the use of these resources as weapons in the cold war, and world-wide hopes for higher levels of living in the face of mounting population pressures. It is apparent that demands on the existing machinery for developing and testing concepts in national security policy will be strained more than ever, unless large and effective steps are taken to increase scientific and technical resources to apply to problem situations.

The objective of this proposal is to suggest ways in which the social, political, and behavioral sciences' research capability can contribute most effectively to national security. Three things are necessary to accomplish this: (1) to point out the deficiencies in current operations on the basis of a survey of research in support of national security; (2) to consider areas of knowledge that could contribute more adequately to national security, given proper support and encouragement; and (3) to recommend appropriate organizational arrangements, facilities, and resources.

Existing Arrangements for the Use of Research in Support of National Security Policy

A brief survey of existing arrangements for the use of research in support of national security policy has disclosed no plan or mechanism for more effective collection, analysis, and presentation of intelligence data. Nor is there any plan for developing and harnessing social scientific capabilities for more effective national security policy planning and action. Reliance on interagency boards and committees has spread responsibility, slowed reactions, and delayed decisions. It has inhibited the research efforts of those agencies that have wished to improve fundamental knowledge and methods. Top decision-makers must continuously refocus their attention on whatever area is most critical at the moment, and thus neglect pertinent information from areas not *in extremis*. The use of "desks" and area specialists is essential, but can be only partially effective because areas without extreme problems cannot compete effectively for the attention of decision-makers. Essential intelligence data, analyses, and estimates appear in the *National Intelligence Survey*, but the volume of material makes it unmanageable for the decision-maker, who can attend to only a small fraction of it.

Deficiencies in Current Knowledge and Methods That Can Be Met By Social Science Research

Social science research can improve a number of these conditions. The following list suggests some of the developments that might be undertaken; it is by no means exhaustive.

(1) Better methods of rapid analysis, integration, and concise presentation of extensive bodies of background data. Such methods might rely on available mechanical or electronic data-processing techniques, or involve the development of new techniques appropriate to the special problems of national security.

(2) Better methods of quantifying and mechanizing all possible steps in the decision process. Thorough experimentation and testing of procedures in this area are imperative. The effort is warranted by the objective of greatly increasing the scope and effectiveness of top decision-makers.

(3) Better methods for determining optimum results in allocating funds and personnel among competing programs such as alternative weapon systems, foreign economic and military aid, and programs for preserving and expanding resources essential to national security. The costs of offensive and defensive military weapons and the potential cost of civilian defense pre-pa-

rations are so great that some choices must be made, and they must be made quickly and well.

(4) New methods for simulating international relations. Game-playing techniques hold considerable promise as a means for analyzing the world-outlooks, motivations, and potential courses of action of foreign powers. Game-playing also can be effective in training personnel at all levels in operating and decision roles. For example, group-dynamics techniques can be applied in simulated international interactions to provide the kind of training essential in understanding the frame of mind and negotiating behavior of foreign leaders.

(5) Improved methods of evaluating the attitudes of foreign populations. The attitudes of the power elites of other nations cannot readily be determined through the usual methods of attitude assessment. Methods should be devised for determining the attitudes of groups such as the Soviet Army or Air Force for example, or the attitudes of Soviet scientists and other intellectuals on matters of interest to the U.S. A "Soviet Defector Institute" made up of a selected group of persons who have emigrated from the U.S.S.R. is one of a number of developments that might make it possible to evaluate the attitudes of persons inaccessible to customary methods of opinion research. Means for attracting Soviet citizens into situations where they might be studied include the invitation of Soviet military leaders to U.S. academies, or the invitation of Soviet engineers or behavioral scientists to extended courses in the U.S.

(6) Improved methods of persuasion. The United States government must give increased attention to the problems of attitude change, if only as a measure of defense against Communist efforts to win over the uncommitted peoples of the world. Methods also might be developed for meeting any future effort of the Soviet Union to convert any part of the U.S. population, and for the persuasion of the people of hostile nations. Another major requirement would be the development of techniques to assure the effective motivation of the American people to support long-term programs of national defense, despite the possible distraction of domestic and foreign events.

(7) Better methods of initiating, developing, and testing new concepts applicable to U.S. national security operations. If the U.S. is to take and hold the initiative in international power situations, a continuous flow of action integrated in terms of broad policy must be developed; this sort of consistent behavior would force hostile nations either to follow our lead or to take defensive action.

Appropriately, at the present, responsibility for developing ideas useful in psychological and cold war operations is diffused among the various agencies having programs that can affect hostile powers. A "proving ground" for psychological warfare concepts is lacking, however. We need an agency that can readily develop, integrate, and test ideas and programs, and assist in setting up prototype operations. The scope of such a test and development facility should permit it to consider, test, and assign responsibility for programs in many areas of national security policy. It should be concerned not only with psychological warfare systems but also with other problems, such as the psychological impact of physical weapon systems, disarmament, reduction of tensions, aid to foreign nations, avoidance of military surprise, evaluation of the human factors in surveillance and surprise, insurance of survival of adequate civil government and command in the event of attack, and evaluation of needs and programs in passive defense.

Organizational Facilities Required

Three facilities are required to meet the research needs of the National Security Council, the State Department, the Central Intelligence Agency, the National Aeronautics and Space Administration, the Department of Defense, the Army, the Navy, the Marine Corps, and the Air Force. These three facilities, together with their libraries, contracting office, and administrative and support activities, would comprise an Institute for National Security Affairs. The In-

stitute should be independent of any of the operating agencies, and equal or superior in status to the Operations Coordinating Board; it should be directly under the purview of the National Security Council. The component parts of an Institute for National Security Affairs would be:

(1) National Affairs Laboratory and National Academy of Political Affairs;
(2) National Security Test, Development, and Evaluation Agency; and
(3) Office for Research on Psychological, Sociological, and Political Aspects of National Security.

These divisions of the Institute are described below in terms of major mission and facilities or composition.

National Affairs Laboratory and National Academy of Political Affairs

The purpose of these related activities would be to foster research related to the development of U.S. policy, both domestic and international. Such research would concentrate on developing concepts or potential programs for use three to ten years in the future, not earlier. Research results produced by the Laboratory or by the Academy would be reviewed and utilized by the National Security Test, Development, and Evaluation Agency whenever possible. In no case would the Academy or the Laboratory design and carry out operating programs, except when prototype operations would be essential to demonstrate the applicability of new concepts.

The National Affairs Laboratory would provide an in-service group of social and behavioral scientists from economics, political science, sociology, social psychology, anthropology, and related fields applicable to the study of national security problems. Scientists working in the Laboratory would have access to personnel and documents dealing with current operations of national security agencies, not so that they could become involved in current decision but so that they could achieve the maximum degree of insight into established policy considerations. Such understanding is necessary as a conceptual basis for effective research, for developing new ideas, and for systematic integration of possible operating programs for consideration and selection by policymakers and those responsible for future decisions. Knowledge of current operations is also essential to assure that applied research avoids unrealistic assumptions and oversimplified models of interaction. The mission of the Laboratory would be to carry out studies to provide the social scientific knowledge and tested hypotheses most relevant to the problems to be faced by decision-makers three to five years in the future.

The National Academy of Political Affairs would be composed of behavioral scientists with established reputations, who would undertake research relevant to matters of domestic or international policy. Scientists selected for participation in the Academy would spend two or three years as fellows. The appointee would receive a stipend comparable to his prior salary, plus an allowance for dislocation. Academy funds would be available to cover the cost of travel essential to his research, and he would be able to request research funds and assistants. Members of the Academy would be free to select their own area of interest and to make use of the facilities and services available elsewhere in the Institute, particularly from the in-service staff of the Laboratory. The members of the Academy and the staff of the Laboratory should be free to study the same problems, if only because replication may be valuable.

The mission of the National Academy of Political Affairs would be twofold: first, to enlist the informed interest of a group of distinguished scientists in the full range of problems of policy formation and interaction; and second, to provide unique training to social scientists who can influence the training of future agency personnel, to stimulate understanding of national security problems, and to develop additional resources for the achievement of national goals through political means. At times, Laboratory and Academy studies would suggest topics for fundamental research in the behavioral sciences. On the basis of these requirements the Office for Research (see

below) could support the necessary research tasks through external contracts.

National Test, Development, and Evaluation Agency

A test and development facility free of the demands of direct operations is urgently needed, to perform integrated studies of all factors involved and to determine cost-utility factors in various courses of action. This recommendation does not involve any shift in responsibility for decisions to the test and development agency. In fact, the effectiveness of this type of agency depends on its freedom from ultimate operational responsibility. The test and development agency should not be subject to direction by operating agencies. It should seek to develop and test programs from one to five years in advance of current operations, and should be free to reject tasks of high immediate priority, insofar as answers to current problems will be worthless by the time necessary studies are completed.

This body would be responsible for developing concepts into integrated programs. Among the three divisions of the Institute for National Security Affairs this agency would give the most direct support to operating agencies. So far as possible, the Test, Development, and Evaluation Agency would test ideas or programs before their inauguration. Operational analysis techniques and systems evaluation methods would be used to estimate the effectiveness of programs not susceptible to advance testing. Personnel available to the agency would include scientists and specialists dealing with the assessment of social and political aspects of behavior, systems evaluation, operational analysis, engineering, electronics, mathematics, and data processing—all essential for devising and developing systems for managing data and mechanizing decision and thought processes. Techniques, methods, programs, testing of ideas related to policy implementation, and improvement of equipment would lie within the scope of this agency. Requirements for fundamental research would be transmitted to the Office for Research.

Office for Research on Psychological, Sociological, and Political Aspects of National Security

This office would sponsor the fundamental research essential to long-range (ten to twenty years) improvement of national scientific capabilities to meet problems of national security. Its primary interests would be unsolicited research proposals in areas related to national policy formation and security. It would include all behavioral science fields related to the establishment of national goals and to the mobilization of human resources, in both the domestic and the foreign spheres. It would rely primarily on university scientists for fundamental research, but when necessary would utilize other organizations having special capabilities for conducting particular types of fundamental research. It is considered essential that most fundamental research be conducted on unclassified contracts, but the possibility that classified tasks could be undertaken should exist.

This proposal should not stand alone; others are needed and welcomed in the current legislative and executive review of national security machinery. Although the National Institutes of Health, the National Science Foundation, and the Department of Defense already provide some support for social research, they cannot sponsor the kinds or volume of research necessary for adequate support of national security policy. Ultimately there must be a national policy for the social sciences, as a counterpart of the national science policy for the physical and biological sciences.

Rationalizing the Intake of Information

by ALFRED DE GRAZI

The scholar, the administrator, and the manager are adrift on a sea of information. They must live from it without being swamped. An elaborate, mechanized service to fill individual "prescriptions" for different types of information will be technically feasible in the near future.

The gentle lady who gives you your library book may soon be as rare as "pop and mom's" corner grocery store. The reason is the same; just as the chain stores and supermarket have taken over food supply and distribution functions, new forms of organization may soon supplant the traditional library system and the library search techniques used by present-day scholars and librarians. The movement toward new concepts of librarianship and intellectual services is presently chaotic and dependent upon technicians and cyberneticians, so that its ultimate human meanings are not being closely examined. Most discussions of such developments as MT (machine translation) and IT (information retrieval) are couched in term of data-storage banks, documents, communications mathematics, etc., rather than in terms of the all-too-human intellectuals who would be employing them. However, the human meanings and services are immanent in these new complexes.

Many people are paid well to find access to our minds. Unfortunately their messages are largely irrelevant to our individual needs and wants. Even the best disciplined and efficient of inner monitors, however, cannot protect us adequately or guide us surely. We need not speak of graphic displays, of television, or of the daily newspapers. Consider only the messages carried by the 60 billion pieces of mail delivered yearly by the U.S. Post Office, the several thousand new book titles each year, the 100,000 titles in print, the millions in libraries, and the 15,000 periodicals. Then remember how many people cannot or will not read, and consider finally the two million souls whose business is consuming symbols, that they may emit other symbols and give orders and advice. Here lies the problem of the intake of the intelligentsia and the true problems of the librarian in the centuries to come.

The scholar—as the epitome of the mind worker—has a certain amount of time and wants certain materials to fill it. He has needs that are produced by his values and goals, which are subject to long- and short-run change. Some needs are vocational and specialized. Others range out into fiction and aesthetics, philosophy and current events. The quality of material for consumption varies with his social role: for an advisor to a mayor one type of material is needed, and another for a psychologic theoretician.

The intensity of consumption is an important factor; the range of consumption another. The educated man who is intellectually specialized wants to scan with maximum completeness and economy the full range of raw data and theory in his special area, and he wants a closer look at those that he might need most. He wants them in a separable format and, if in another language, he wants them translated. The specialized intellectual also wants general information on subjects related to his field, and finally, he has some general cultural need.

What would this man and his institutional supporters pay for such services? If he and a half-million of his fellows paid $1,000 a year, as they could and should, the basis would be laid for the capitalization of a large new industry to provide the full range of contemplated services. It would have a corps of prescription consultants to aid persons in prescribing their mental diet, a publications search staff, world-wide library connections, reproduction facilities, and mailing machinery.

Each week the subscriber would receive a packet of published materials. These would contain items that he himself had prescribed, after consultation with friends and experts. Items would come from a vast facility commanding books old and new, journals, encyclopedic fact (from vast data storage banks), abstracts, commentaries, annotations, and news. The subscriber may wish material from several fields: the history of art, psychology of learning, kinship systems research, and general news of events concerning a certain group. All these wishes would constitute his prescription and would be coded along with the prescriptions of thousands of other persions. The elements of these prescriptions would flow largely automatically from inventories and production facilities. The subscriber would be entitled to a quota of special requests without extra charge, perhaps radioing his proposition from his study to the center via communications satellites circling the world. And as his needs changed he would revise his prescription.

For all of this, the intellectual does not have to change many habits and may indeed be able to indulge a few of his long-standing ambitions to restore some of the contemplation and self-control of ancient intellectuals to his life. He needs a better set of intake skills. He might have to acquire the skills to operate a receiving system—viewing, tape-recording, scanning, indexing, prescribing, and communicating instruments. Above all, he needs something he should have already—the ability to read in several gears. (Too many intellectuals still believe, with the illiterate, that anything in print is as precious as the Bible and should be read that way, or not at all.)

What objections might there be to such a system? The intellectual will not be deprived of "freedom," unless all change of habit is a deprivation. The incidence of newspaper narcosis would decline, and the best plants would be converted to serve him better. He might miss browsing in stacks and bookstores, because an adequate storage and selection master system would make much activities as out-dated as plowing behind a horse. (A few excellent bookstores might be maintained for those with traditional tastes in recreation.) A more important possible objection is that the specialist is already aware of all that is occuring in his field. But if this is so, we cannot explain the fact that the greatest efforts toward mechanical servicing of intellectual intake are occuring in precisely those areas of intellectual work that are most specialized—chemistry, biology, and physics.

The screening, selection, and provision of the appropriate kinds of mental nourishment for a man's position, work, and goals in life is one of the key technical problems of man's existence—like providing food and shelter. If it could be mechanized, thus freeing him for other productive work and for the more full and contemplative enjoyment of life, it should be endorsed and abetted.

ON THE COVER: A detail of Stela Ur-Nammu from Ur, dated about 2300 B.C., excavated by the joint British Museum-University Museum expedition to Iraq and provided for our readers by the University Museum of the University of Pennsylvania. The Sumerian king, Ur-Nammu, is credited by Professor Samuel Noah Kramer with being "the first Moses." He promulgated the earliest known written code of laws, three hundred or more years before the famous Code of Hammurabi. In his book, *History Begins at Sumer* (Doubleday Anchor Book, 1959), Kramer applies the idea of social invention to earliest history and emerges with twenty-seven "firsts" from the clay tablets of Sumer, including the first schools, the first "war of nerves," the first bicameral congress, and the first library catalogue.

ET AL.: Scientific Method and Social Change

What Good History Is . . . Inquiry must be as nearly contemporaneous as possible; otherwise it is only of antiquarian interest. Knowledge of history is evidently necessary for connectedness of knowledge. But history which is not brought down close to the actual scene of events leaves a gap and exercises influence upon the formation of judgments about the public interest only by guess-work about intervening events. Here, only too conspicuously, is a limitation of the existing social sciences. Their material comes too late, too far after the event, to enter effectively into the formation of public opinion about the immediate public concern and what is to be done about it.

Failure of News Media. A glance at the situation shows that the physical and external means of collecting information in regard to what is happening in the world have far outrun the intellectual phase of inquiry and organization of its results. Telegraph, telephone, and now the radio, cheap and quick mails, the printing press, capable of swift reduplication of material at low cost, have attained a remarkable development. But when we ask what sort of material is recorded and how it is organized, when we ask about the intellectual form in which the material is presented, the tale to be told is very different. "News" signifies something which has just happened, and which is new just because it deviates from the old and regular. But its *meaning* depends upon relation to what it imports, to what its social consequences are. This import cannot be determined unless the new is placed in relation to the old, to what has happened and been integrated into the course of events. Without coordination and consecutiveness, events are not events, but mere occurrences, intrusions; an event implies that out of which a happening proceeds. Hence even if we discount the influence of private interests in procuring suppression, secrecy and misrepresentation, we have here an explanation of the triviality and "sensational" quality of so much of what passes as news. The catastrophic, namely, crime, accident, family rows, personal clashes and conflicts, are the most obvious forms of breaches of continuity; they supply the element of shock which is the strictest meaning of sensation; they are the *new* par excellence, even though only the date of the newspaper could inform us whether they happened last year or this, so completely are they isolated from their connections.

Social Science as News. So accustomed are we to this method of collecting, recording and presenting social changes, that it may well sound ridiculous to say that a genuine social science would manifest its reality in the daily press, while learned books and articles supply and polish tools of inquiry. But the inquiry which alone can furnish knowledge as a precondition of public judgments must be contemporary and quotidian. Even if social sciences as a specialized apparatus of inquiry were more advanced than they are, they would be comparatively impotent in the office of directing opinion on matters of concern to the public as long as they are remote from application in the daily and unremitting assembly and interpretation of "news." On the other hand, the tools of social inquiry will be clumsy as long as they are forged in places and under conditions remote from contemporary events. . . .

JOHN DEWEY

The Public and its Problems, 1927
(Chicago: Gateway Books, 1946), pp. 179-81

IN THE NEWS

continued from p. 2

UNIVERSITIES: • New School for Social Research expansion is being partly financed by $62.5M from the Field F. • Drury Col. (Missouri) has dedicated its new *Breech Col. of Bus. Admin.* • Carnegie Inst. of Tech. and U. of Calif. have undertaken faculty seminar programs in bus. admin. with Ford F. financing. • Cornell plans $1.5 million *Grad. School of Business and Pub. Admin.*

FOUNDATIONS: • Rockefeller grants in 1st quarter '60 included some $1.3 million for purposes related to behav. sci. Among the grants: $206.8M to *SRC* for survey study of '60 elections; $250M to Johns Hopkins U. and *Population Council* for joint program of assistance to govts. on population problems; $250M to bring Tibetan refugee scholars to Tibetan study centers in U.S. and other countries; $120M to Harvard's *Center for Intl. Affairs* for fellowships for non-Western officials and scholars; $78M to *Intl. Press Inst.*, Zurich, for seminars for Asian newsmen; $75M to Harvard's *Russian Research Center* for 4-yr. analysis of Soviet for. policy; $50M to Mich. State U. for study of admin. problems in developing economies by J. LaPalombara, R. Scigliano, E. W. Weidner, J. T. Dorsey; $70M for U.S.-Soviet scholar exchange programs of *Amer. Council of Learned Societies*; $35M for social, historical study of the Rio de la Plata region at U. of Buenos Aires; $30M for comp. study of for. policy formulation at Amer. U.; $10M for comp. study of non-European nationalism by *Amer. Univ. Field Staff.* • Rockefeller also granted $400M to *Foundation Library Center* (NYC; F. E. Andrews, Director) to continue its information activities. • Ford grants in 2nd quarter '60 included $210M to U. of Buenos Aires to strengthen its Dept. of Soc.; $150M to U. of Heidelberg for its *Inst. for Pol. Sci.*; $103.2M for fellowship awards to 10 law profs. for research in law, pub. affairs, intl. legal problems; $85M to U. of Mass. for new pub. affairs program; $75M to *Inst. of Intl. Ed.* for a *Council of Higher Ed.* survey in the Amer. Republics; $50M to *Inter-Amer. Planning Society* for a survey of urban and regional planning facilities in Latin Amer.; $25M to U. of Oregon for research on U.S. for. investment experience and pub. policy. • Ford made 181 awards in its 9th annual *For. Training Fellowships* program, gave 151 fellowships in bus. admin. and econ. to grad students, profs. at 43 universities for '60-'61 academic yr. • Recent Carnegie Corp. grants include $450M to raise teaching standards in schools and colleges of African republics; $419M to *Inst. for Colleges and Univ. Administrators* for research and training programs in academic admin.; $250M to *College Entrance Exam. Board* for comp. study of univ. admissions throughout the world; $180M to *SSRC* for travel expenses of Amer. scholars to intl. meetings; $107.5M to *Amer. Univ. Field Staff* for research on role of ed. in Latin Amer. econ. and social development; $50M to U. of Calif. for research on creativity. • New World F. gave $25M to U. of Chicago Law School for confs., seminars on relations among law, ethics, business practices. • 20th Century Fund gave $100M to group of scientists headed by MIT's Dr. B. T. Field for investigations on arms control during 3-mth. conf. • Rabinowitz F. gave $25M to U. of Wis. for a Dept. of Hist. study of the role of corporations and labor in Amer. for. policy formulation. • Grants not previously reported here: Mellon Ed. and Charitable Trust, $100M to *Hoover Inst. on War, Revolution and Peace* for library acquisitions, $30M to U. of Penna.'s *For. Policy Research Inst.* to study U.S. policy *re* Western Europe and the Atlantic Community; Samuel Fels Fund has given $940M to Antioch's *Fels Research Inst. for Study of Human Development* over past 4 yrs.; Carnegie gave $200M to MIT's *Center for Intl. Study* for research on sub-Saharan Africa; M. R. Babcock F. gave $75M to Duke's *World Rule of Law Center* for operating needs; W. K. Kellogg F. gave $278M to Johns Hopkins' *School of Advanced Intl. Studies* for career training and research in Latin Amer. studies.

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